DOCUMENT RESUME

ED 186 237 SE 030 564

AUTHOR Shafer, Janet I., Ed.
TITLE Magnet School Planning Project: Science and Technology Magnet School.
INSTITUTION Dallas Independent School District, Tex.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
PUB DATE 79
NOTE 352p.
AVAILABLE FROM Dallas Independent School District, 3700 Ross Ave., Dallas, TX 75204 (no price quoted).

EDRS PRICE MF01/PC15 Plus Postage.
DESCRIPTORS Curriculum Development; Educational Facilities; *Educational Planning; Educational Research; *Evaluation Methods; Flow Charts; *Magnet Schools; *Models; Needs Assessment; Nontraditional Education; School Buildings; Science Education; Secondary Education; *Secondary School Science; Technology

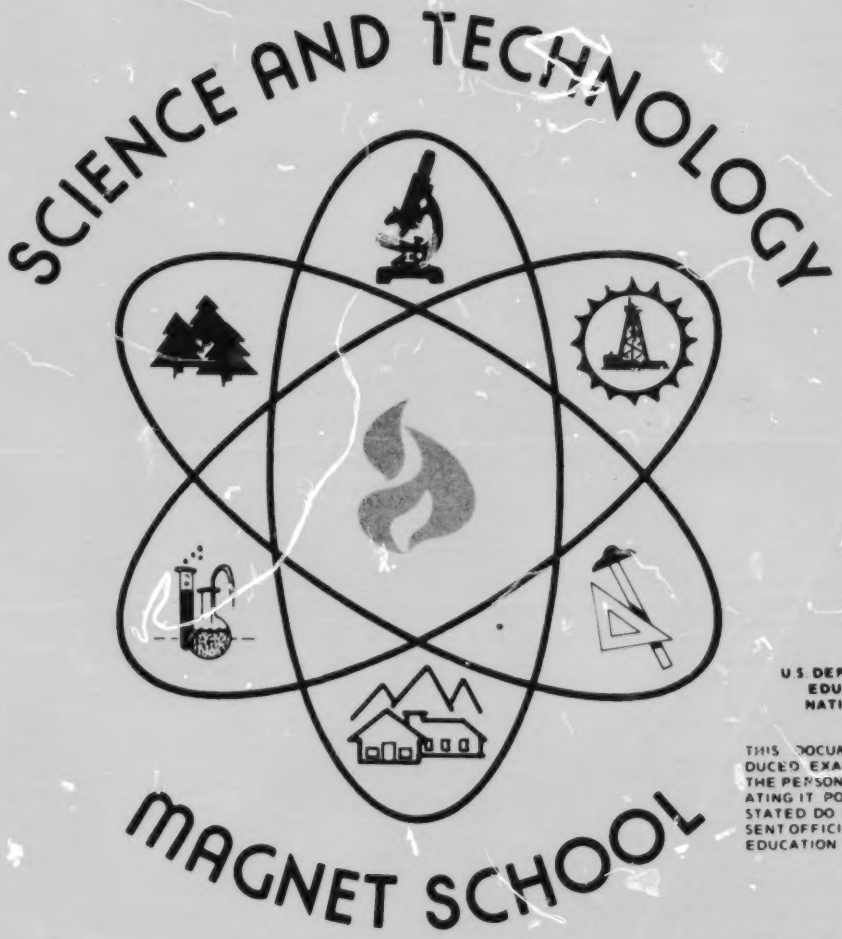
ABSTRACT

This report presents a replicable model for developing a magnet school based on the planning of the Dallas Independent School District's Science and Technology Magnet High School. The model is based on Malcolm Provus' process called "Discrepancy Evaluation," designed as a guide for public school programs to describe the discrepancy between expectation and performance. The model contains four levels with each level more detailed than the previous one. At each level there are four components: the network, the input-process-output, the activity schedule, and the flow chart. The remainder of the report presents a description of the history of magnet schools, visitation reports, the educational specifications, consultant reports, and an annotated bibliography. (SA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED186237

MAGNET SCHOOL PLANNING PROJECT



U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
W. J. Webster

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

dallas independent school district

SE 030 564

BOARD OF EDUCATION

Bradford N. Lapsley, *President*

Jill Foster, *Vice-President*

Sarah Haskins

Robert Medrano

Gerald M. Stanglin

Kathlyn Gilliam

Harryette Ehrhardt

Robert L. Price

Jerry Bartos

EXECUTIVE TEAM

Linus Wright
General Superintendent

Larry Ascough
Associate Superintendent
Communications

William Webster
Associate Superintendent
Accountability and Development

William H. Cotton
Associate Superintendent
Management

Yvonne Ewell
Associate Superintendent
East Oak Cliff Sub-District

Joe M. Pitts
Associate Superintendent
Learning Services

Robert Andrews
Assistant Superintendent
Business Services

Juan Flores
Assistant Superintendent
Multicultural Education

Otto Fridia
Assistant Superintendent
Elementary Learning

Leon Hayes
Assistant Superintendent
East Oak Cliff Sub-District

Carlton C. Moffett
Assistant Superintendent
Alternative Learning

Pablo Perez
Assistant Superintendent
Learning Services

George Reid
Assistant Superintendent
Secondary Learning

John J. Santillo
Assistant Superintendent
Personnel Services

Weldon Wells
Assistant Superintendent
Support Services

Tim Beckett
Deputy Associate Superintendent
Support Services

H. B. Bell
Deputy Associate Superintendent
Special Funds Acquisition and Monitoring

Robby Collins
Deputy Associate Superintendent
Communications Management

Edward L. Cowens
Deputy Associate Superintendent
Personnel Service

Sandra Malone
Deputy Associate Superintendent
Community Relations

Ruby Morris
Deputy Associate Superintendent
Student Services

Allen R. Sullivan
Deputy Associate Superintendent
Student Services

FINAL REPORT

MAGNET SCHOOL PLANNING PROJECT
(MSSP)
(FEBRUARY 6, 1979 TO OCTOBER 31, 1979)

PREPARED FOR:

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
OFFICE OF EDUCATION
BUREAU OF EQUAL EDUCATIONAL OPPORTUNITY
SPECIAL PROJECTS BRANCH
400 MARYLAND AVENUE, S.W.
WASHINGTON, D.C. 20202

PREPARED BY:

MSPP PROJECT STAFF
TOM C. GOOCH SCHOOL
4030 CALCULUS
DALLAS, TEXAS 75234

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position of the policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

TITLE IX

The Dallas Independent School District does not discriminate on the basis of sex in the educational programs or activities which it operates, and is required by Title IX not to discriminate in such a manner. The district policy not to discriminate on the basis of sex in educational programs and activities extends to employment in and admission to such programs and activities. Inquiries concerning the application of Title IX may be referred to Dr. Ruby Morris, Deputy Associate Superintendent--Student Services for the Dallas Independent School District, whose office is located at 3700 Ross Avenue, Dallas, Texas 75204, telephone number 824-1620, extension 455, or to the Director of the Office of Civil Rights of the Department of Health, Education, and Welfare, Washington, D. C.

CREDITS

MAGNET SCHOOL PLANNING PROJECT

PROJECT DIRECTOR

JESSE M. HARRIS
DIRECTOR
SCIENCE & TECHNOLOGY MAGNET SCHOOL

MANAGING EDITOR

JANET L. SHAFER
SENIOR PLANNER
SCIENCE & TECHNOLOGY MAGNET SCHOOL

Project Staff:

Paul Trautman, Assistant Planner, Science & Technology Magnet School
Joan Vogel, Evaluator, Science & Technology Magnet School
Bill Rakestraw, Assistant Principal/Planner, Science & Technology Magnet School
Helen Shafer, Dean of Instruction/Planner, Science & Technology Magnet School
Gary Atwood, Cluster Chairperson, Skyline Center
Carlton Moffett, Assistant Superintendent for Alternative Learning
Betty Brumley, Clerk/Typist, Science & Technology Magnet School
Marla King, Clerk/Typist, Science & Technology Magnet School
Audrey Depetris, Secretary, Science & Technology Magnet School
Dr. Versia Lacy, Science Coordinator, East Oak Cliff Sub District, DISD

Special thanks to:

Dr. Walt Elliott, California Polytechnic State University
Dr. George A. Weygand Bridgewater State College
Dr. Neal Eigenfeld, Milwaukee Public Schools
William L. Smallwood, Ketchum-Sun Valley Community School
Dr. Maurice Roney, Texas State Technical Institute
Dr. Robert Caldwell, Southern Methodist University

Printed by the Graphics Arts Department of DISD

dallas independent school district

October 15, 1979

Linus Wright
General Superintendent

Dear Colleague:

Over the years education has found itself playing "catch up" with the demands of society and work. We taught, or placed emphasis on, those ideas and subjects which we believed businesses expected their employees to know or which colleges required for entrance. But today, in this rapidly expanding technological age, we find that what is being taught in our regular comprehensive schools does not meet some of the needs of modern society. So, as in the past, we must become more involved with the business and technological world and develop various specialty schools designed to fulfill the immediate needs, as well as those foreseeable future needs of our society. Thus the concept of a magnet school was conceived. This Magnet School Planning Project was created to help you in developing a magnet school should you become interested in specialty schools. Such a planning project is difficult for any group, but particularly difficult for one studying a field which has not been clearly defined.

Our problem was to explore the needs for magnet schools, plan the necessary program, develop the curriculum, and design the proper building facility to meet those needs. There are, of course, certain needs that the educational process must meet--skills, attitudes, traditions, knowledge, and values. While we realize our acute responsibility to the coming society, we also are aware that the public schools reach only so far, and that other operations and media must assume jobs of training and guidance, also. Our responsibility is great, though, and we will neither shun it nor neglect it.

We have tried to define in this study the needs which fall on our shoulders, specifically in the area of magnet schools, and we have outlined a specific plan, including a management model, one that produces both program and facilities which hopefully will stand up to the demands for establishing magnet schools.

We hope you find this project interesting and informative.

Sincerely,

Linus Wright
General Superintendent

LW/ad

3700 Ross Avenue, Dallas, Texas 75204, 214/824-1620

TABLE OF CONTENTS

Introduction 1

The Model 5

Forms 8

Level I 11

Level II 13

Level III 31

Level IV 89

History of Magnet Schools 111

Visitation Reports 119

Educational Specifications 130

Consultant Reports 221

Conclusion 233

Annotated Bibliography 234

INTRODUCTION

The purpose of this project is to present a replicable model for developing a magnet school. Information for this report was compiled during the planning phase of the Dallas Independent School District's (DISD) Science and Technology Magnet High School. This is the eighth magnet school to be opened in the District since 1976 and the one with the most intense concentration on development and planning. Although the model was pilot tested on a science and technology magnet, much input was derived from magnet schools with varied programs, and the plan was formulated for use in any environment.

Alternative schools have been in existence under different names for many years. The term "magnet school" has been introduced fairly recently with many different types of schools operating under that title. At the present there is no firm definition for a magnet school. One definition states that a magnet is considered to be an educational program that is unique and different from programs offered in regular high schools and is available to all students throughout the district. The term magnet is used because the school draws together students with like interests and ability.

This definition allows for great variety in magnet school programs. The Skyline Career Development Center,[1] for which planning was begun in 1964 with the school opening for the 1970-71 school year, was not originally called a magnet, but it meets our definition of a magnet school. Since its opening, the center has grown in popularity and sophistication, currently serving over 2,800 students who have elected to attend. Many vocational and technical schools, in existence for years, would meet this test. The early 1970's brought a new interest in technical and

---

[1] Dallas Independent School District's, Dallas Texas.

vocational education as the age of technology brought escalating unemployment, especially among the unskilled. Alternative schools began to appear for specific groups of problem students: unwed mothers, drop-outs, etc. These schools gave the public the impression that alternative schools were limited in their usefulness to students with special problems.

As alternative schools were set up for students with definite interests or career goals, the image of alternatives as being limited to problem students began to diminish. Schools were developed around particular techniques. Educators began to recognize that not all students learned best by using the same teaching method. Magnet schools provide the means to teach students in the manner that best suits the individual.

Magnet school students are drawn from an entire school district rather than from a specific attendance zone. Such schools offer students options not available in their neighborhood schools and that are alternatives to the traditional education available there. They draw students who share common interests and abilities but who come from vastly different social, cultural, and economic backgrounds. This feature of magnet schools allows voluntary alternatives to be effectively utilized in the desegregation of large school districts.

The development of the other Dallas magnet schools came after the desegregation order handed down by the Federal District Court in April of 1976. The court, after consultation with a citizens advisory group, felt that the use of magnet schools would be a desegregation tool acceptable to a large segment of the community that would provide a high quality of education. Within the time limit set by the court order, the District had opened four magnet schools (grade 9-12), three academies (grade 7-8), and five vanguard schools (grade 4-6). Since that time two more magnet

schools and three additional academies have been opened.

The community at large, and businesses in particular, have embraced the magnet schools, with many companies and organizations becoming intimately acquainted with the educational process. Through such programs as "Adopt-A-School" and the use of community advisory committees, the community has become directly involved in the planning and the success of the public schools.

> "Urban public education is on the firing line throughout the nation. Attacked from all sides by the press, parents groups, community organizations, local governments, and the courts, public school systems are looking for new answers. Answers on how to teach all students basics and 'real world' survival skills and how to get adult cooperation towards this goal." (Building Tomorrow Today, DALLAS Magazine, September 1978)

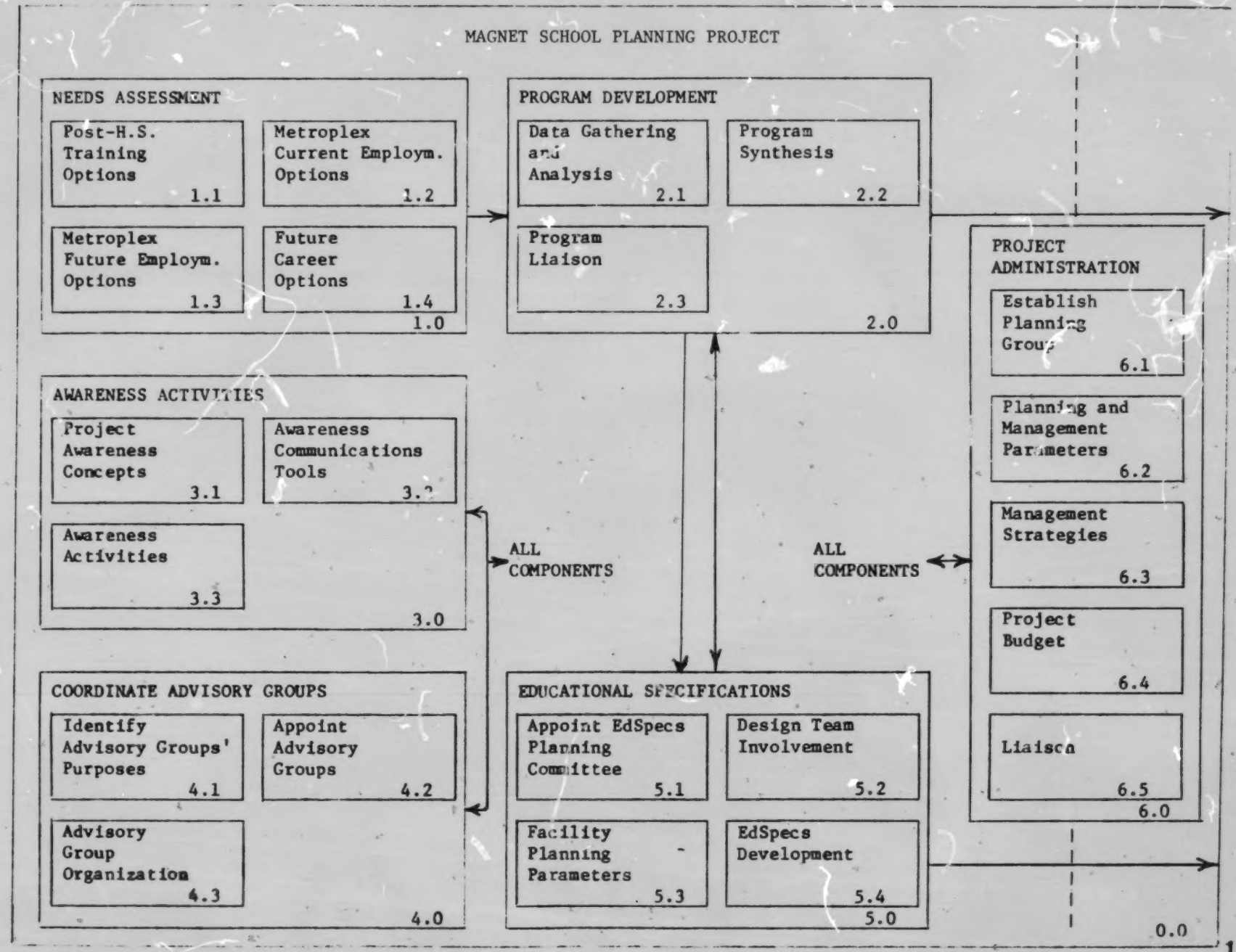
What we are presenting here is one possible solution to some public school problems through the use of magnet schools.

During this study, we have looked at magnet schools in a number of districts. These schools varied tremendously in style and philosophy. The "History of Magnet Schools" and the "Visitation Report" dealt with magnet schools of all varieties. Reading these will give the reader of this report a clear view of the tremendous potential associated with the alternative school movement. It should be remembered that each district must tailor its program of magnet schools to fit the needs of the students of that community. Just as there is no one best way for students to learn, there is no one best way to develop a magnet school.

Our model includes elements found in other schools studied. A comparison of the similarities and differences in the programs we researched can be found in the "Extra District Visit Reports" contained in this study. Our model has been successfully used by the Dallas Independent

School District. This model shows the steps required in the planning, development, and implementation of a magnet school. It can be used as it is written but is flexible enough to be altered to fit the needs of nearly any community.

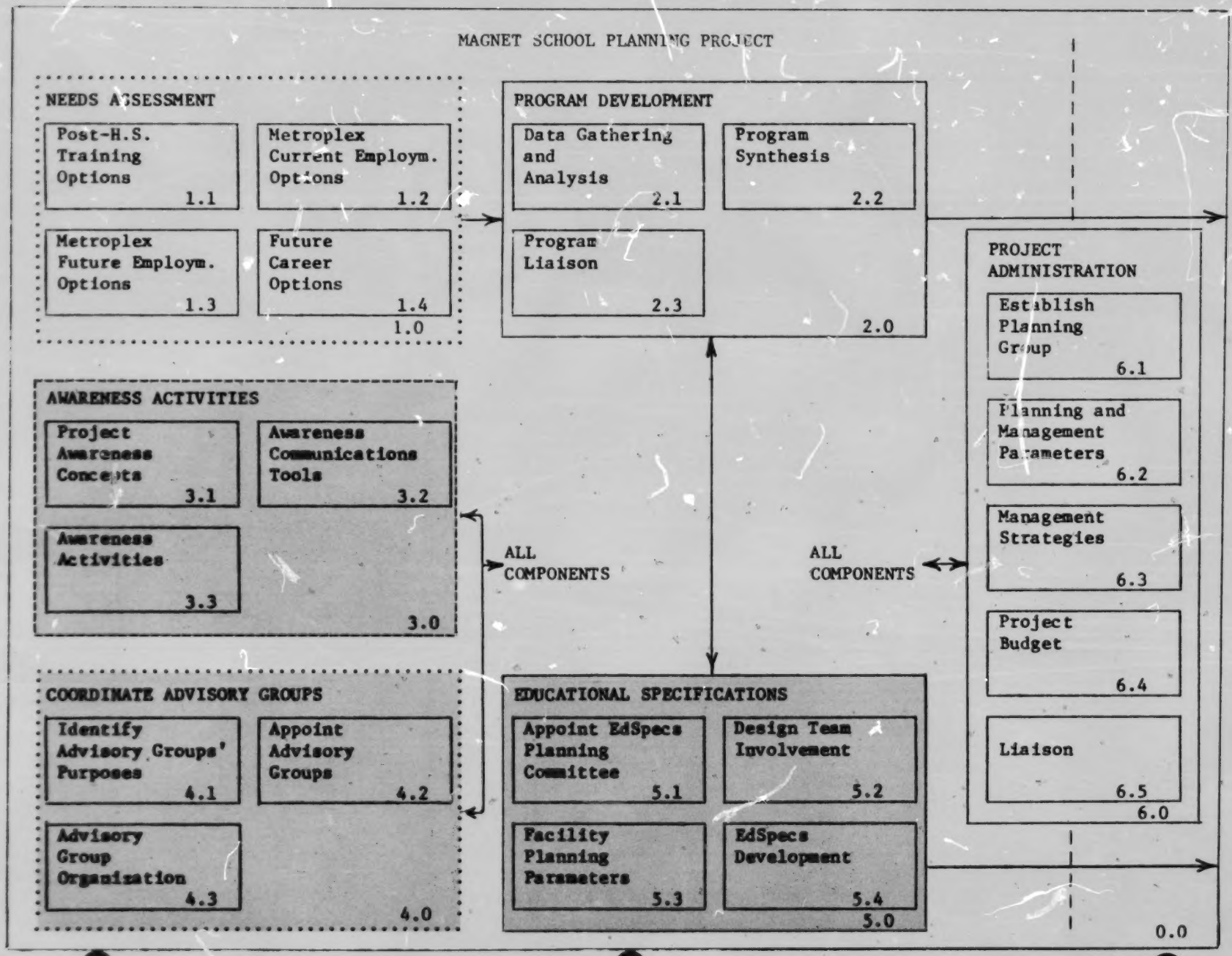
LEVEL III NETWORK - Year One



Draft

Date

LEVEL III NETWORK - Year One



This chart shows the project network at the third level of the plan. This level shows the major activities including each component named at level two. It again shows the relationships of the components of the plan.

18

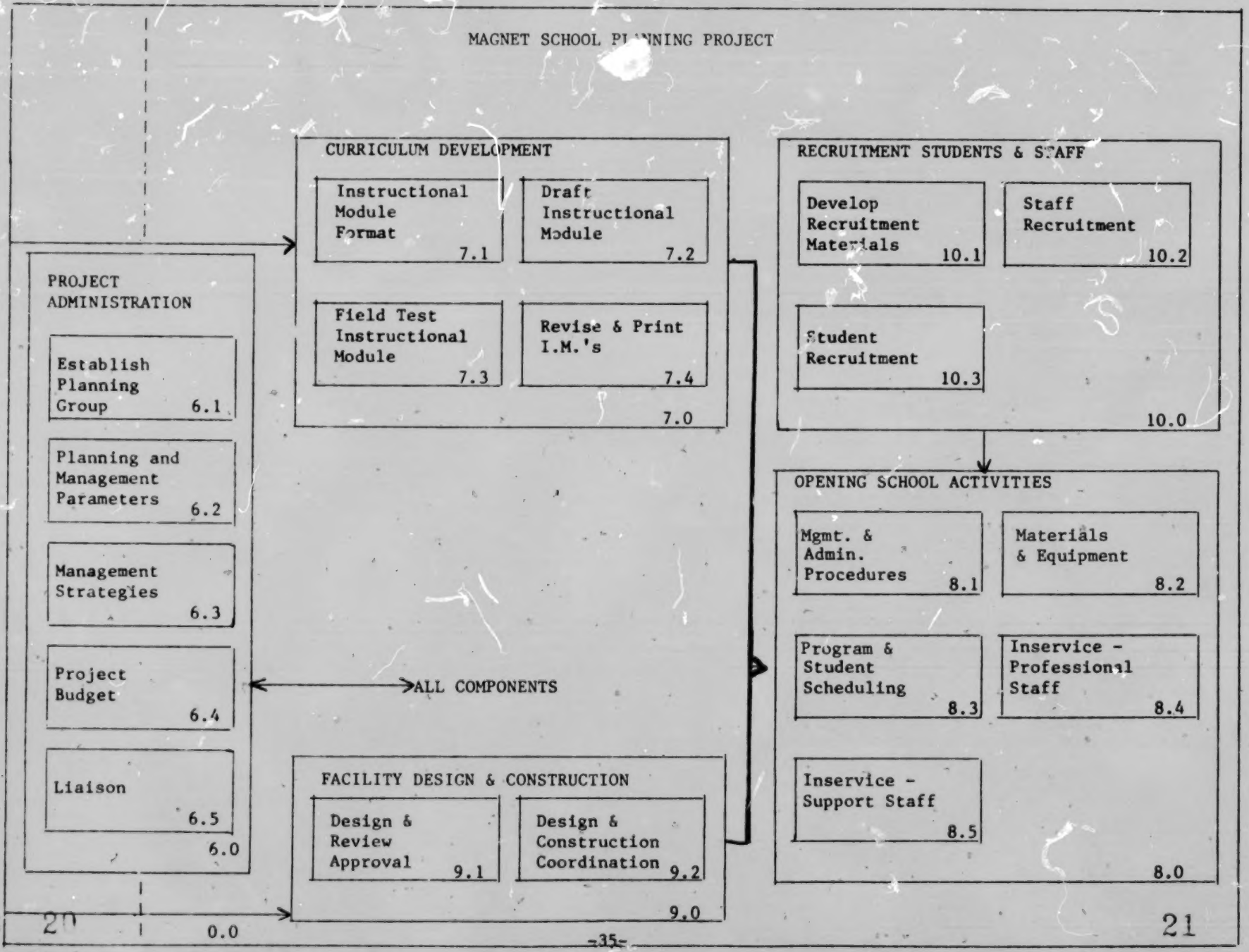
19

Draft

LEVEL III NETWO[illegible] YEAR TWO +

Date

MAGNET SCHOOL PL[illegible]NNING PROJECT



LEVEL III NETWORK YEAR TWO +

Draft

Date

MAGNET SCHOOL PLANNING PROJECT

CURRICULUM DEVELOPMENT

Instructional Module Format 7.1

Draft Instructional Module 7.2

Field Test Instructional Module 7.3

Revise & Print I.M.'s 7.4

7.0

PROJECT ADMINISTRATION

Establish Planning Group 6.1

Planning and Management Parameters 6.2

Management Strategies 6.3

Project Budget 6.4

Liaison 6.5

6.0

ALL COMPONENTS

0.0

THE MODEL

This model is a plan for developing a new school. It has been adapted to meet the specific needs of planning a magnet high school and is based on Malcolm Provus' process called Discrepancy Evaluation.[1] The Discrepancy Evaluation Model was designed as a guide for public school programs to describe the discrepancy between expectation and performance. It establishes a cause and effect relationship and combines the descriptive methods of the social scientist with the theoretical methodology and technique used in experimental design. The format is adaptable for use at any grade level and with any subject or teaching philosophy. This model should facilitate the setting of priorities, establishment of guidelines, and the delegation of responsibilities--thus serving as an aid to school planning efforts.

The model contains four levels with each level more detailed than the previous one. At each level there are four possible components--the Network; the Input-Process-Output (IPO); the Activity Schedule: and the Flow Chart. They are designed to aid in identifying activities, assigning responsibilities, and sequencing events. Together these components provide a strategy for developing a new school or program.

Level I addresses the project as a whole. It simply states the goal. At this point a team of planners or developers should be identified and a leader selected to assume responsibility for coordinating activities.

Level II divides the planning into major areas. These may be determined by group "brainstorming" sessions or by administrative directive, or may result from completion of the component forms.

---

[1] Provus, Malcolm. Discrepancy Evaluation. Berkley, California: McCutchan Publishing Company, 1971.

Level III divides each major area into activity groups. This level requires more detailed information, greater definition of activities, coordination of activities, and sequencing of activities.

Level IV lists the individual activities. At this level individuals should be assigned responsibility for specific activities.

At the first three levels, networks are designed to show the relationship among the various sections of the plan. The Network displays all the categories to be included in a diagrammatic format. This schematic aids the team, and others, to visualize the relationship among the categories.

At Levels II and III flow charts are developed to show in more detail how the activities relate to one another and to indicate the time frame in which these tasks are to be accomplished. Adjustments are easily made as the planning process proceeds. The flow charts are also used to determine critical points and paths in the planning process.

Activity schedules developed at Levels II, III, and IV indicate the dates activities begin and end as well as prerequisites for each activity. The primary function of the activity schedules is the development of the flow charts. The activity schedules define the relationship further than the network and allow the development of a time frame and specific responsibility.

At Levels I, II, and III, IPO's are developed for each activity. The Input indicates the human and material resources required. All personnel, groups, sources, and/or materials are listed in this column. The Process column is to identify the activity and/or objective associated with the resources listed in Input. The Output is the product or the result of the activity. IPO's constitute the most important part of the plan. They contain all the information necessary to produce the flow

charts, networks, and activity schedules.

In this model, Level I consists of a network and an IPO. Level II consists of a network, an activity schedule, a flow chart, and an IPO for each area. Level III consists of a network, an activity schedule, flow charts showing critical dates and critical paths, and IPO's for each major activity group. Level IV consists of a detailed activity schedule.

Activity:

Level:

INPUT	PROCESS	OUTPUT

This form is the IPO form used at Levels I, II, and III. It indicates the activity at the top and has space for the input, process, and output for that activity.

27

28

Activity Schedule

Level:

Network Number	Activity	Prerequisite	Begin Date	End Date	Responsibility

This form is used for Levels I, II, and III activity schedules. It indicates the activity, its plan number, any prerequisites, and the starting and ending dates.

29

30

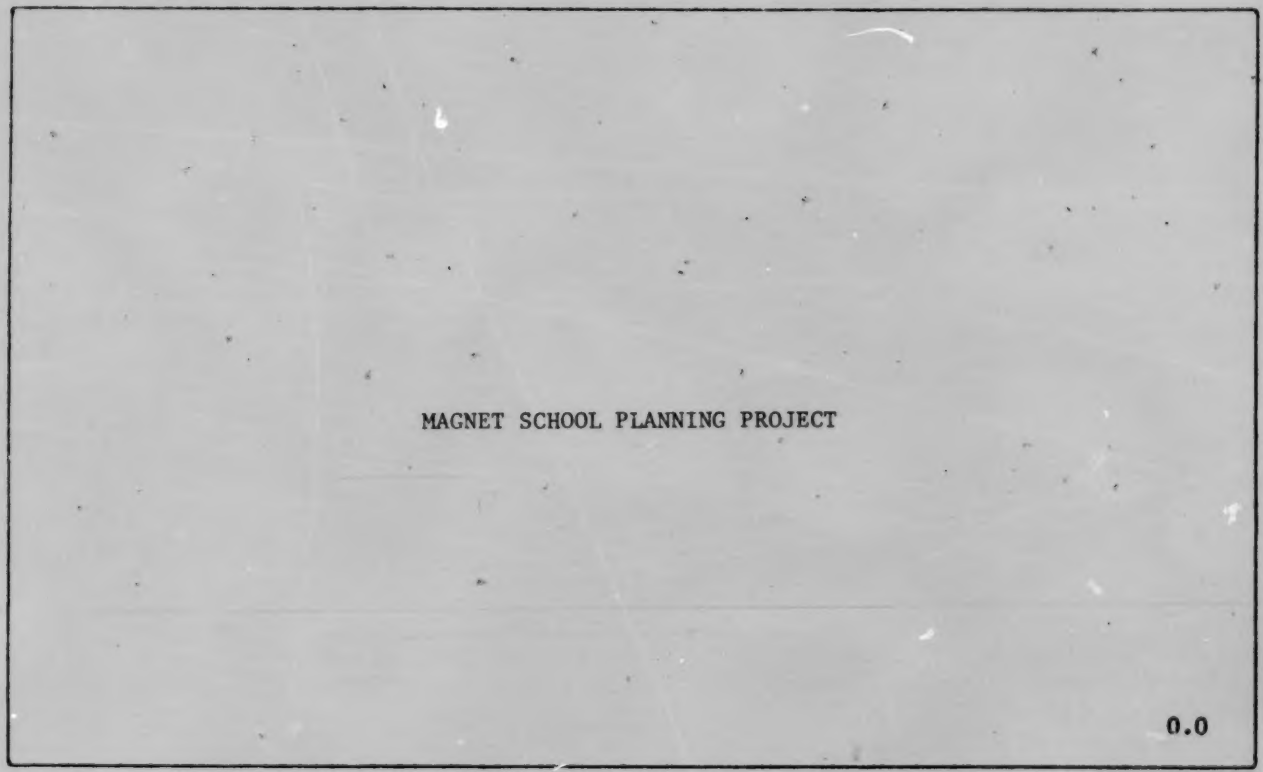
Activity Schedule

Level:

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility

This is the form for the Level IV activity schedule. It indicates the activity, its number, any prerequisites, the time necessary to complete the task, and the starting and ending dates.

LEVEL I NETWORK



The Level I Network shows the whole project in terms of the major goals to be accomplished.

Activity: Magnet School

Level: I

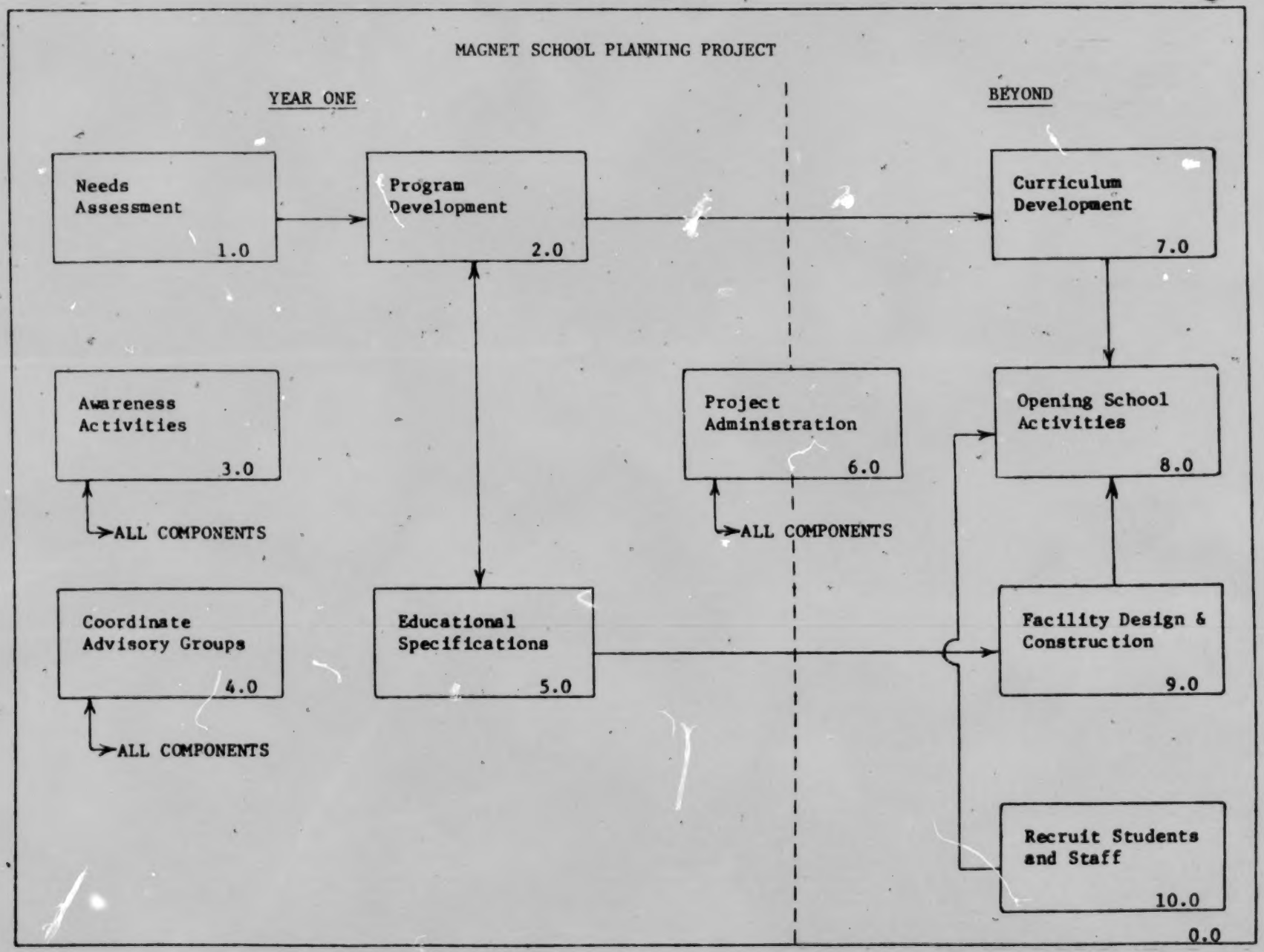
INPUT	PROCESS	OUTPUT
Project Staff District Staff Consultants Representatives of the: . Community . Related Professions	0.0 Magnet School The Project Staff will coordinate and develop the planning of the Magnet school program and educational specifications for the facility for implementation, beginning with the designated year.	Successful opening of the Magnet School, beginning with the designated school year.

* * * * * * * * * * *

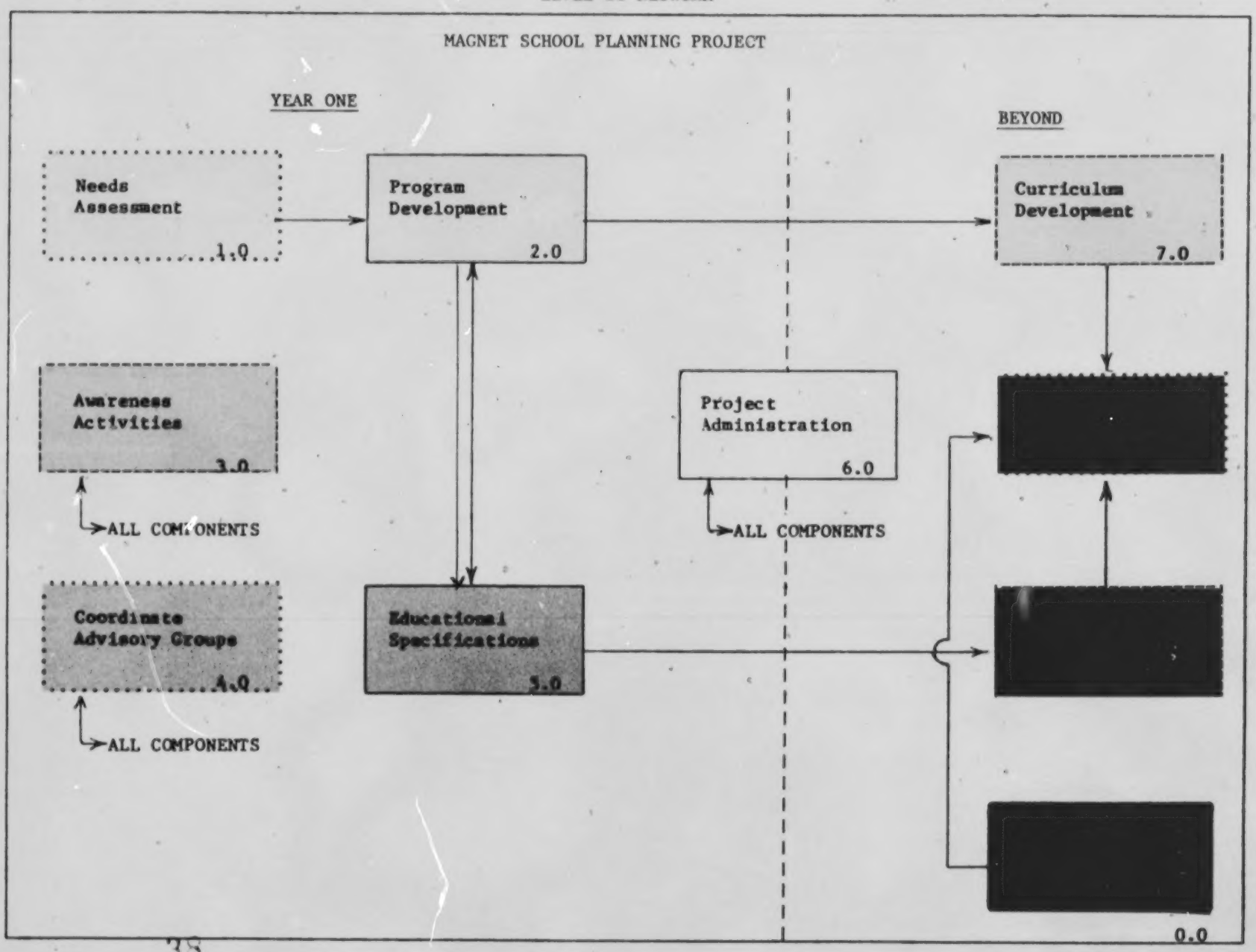
EXPLANATION

The IPO's form the major element of any plan using this format. First a goal is established at each level, then the IPO's are developed. From information contained in the IPO's, other tools, such as the networks, activity schedules, and flow charts, may be developed.

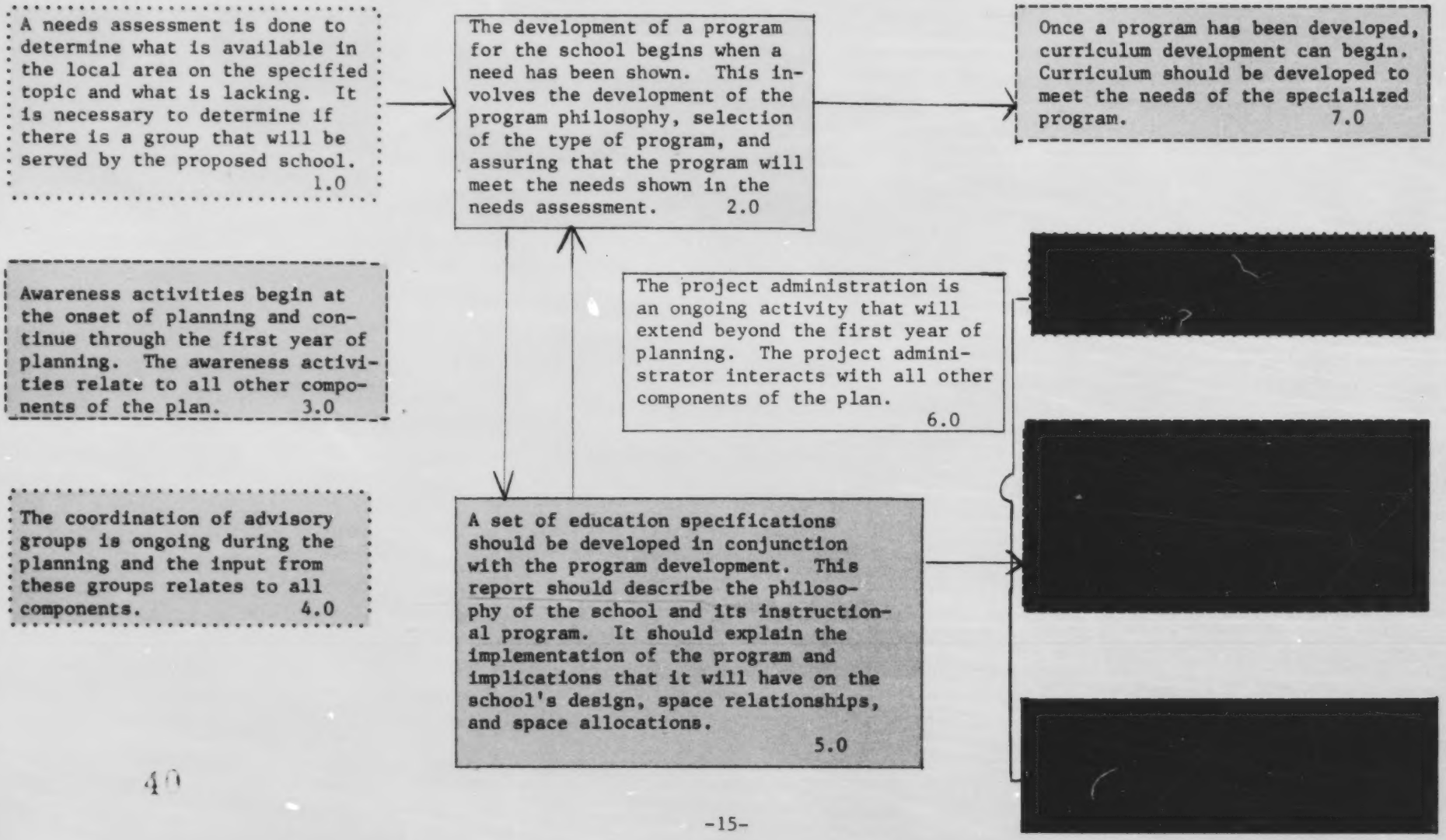
LEVEL II NETWORK



LEVEL II NETWORK



This chart shows the relationship between the major components of this plan. Those to the left of the dotted line are first year activities. Those to the right of the line are after the first year of development.


A needs assessment is done to determine what is available in the local area on the specified topic and what is lacking. It is necessary to determine if there is a group that will be served by the proposed school. 1.0
The development of a program for the school begins when a need has been shown. This involves the development of the program philosophy, selection of the type of program, and assuring that the program will meet the needs shown in the needs assessment. 2.0
Once a program has been developed, curriculum development can begin. Curriculum should be developed to meet the needs of the specialized program. 7.0
Awareness activities begin at the onset of planning and continue through the first year of planning. The awareness activities relate to all other components of the plan. 3.0
The project administration is an ongoing activity that will extend beyond the first year of planning. The project administrator interacts with all other components of the plan. 6.0
The coordination of advisory groups is ongoing during the planning and the input from these groups relates to all components. 4.0
A set of education specifications should be developed in conjunction with the program development. This report should describe the philosophy of the school and its instructional program. It should explain the implementation of the program and implications that it will have on the school's design, space relationships, and space allocations. 5.0

Activity: Needs Assessment

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Consultants Post-High School Educational Institutions Federal and State Agencies	1.0 Needs Assessment The Project Staff will collect information to serve as a foundation for instructional program development through three (3) basic methods: . identify current and future career options in the subject area of the magnet school, . identify current district and post-high school training options in the subject area of the magnet school, and . identify current and future local employment opportunities in the subject area of the magnet school.	A system of subject area career categories for classifying career options Status reports relative to current and future subject area training and occupational options in the local area and the nation

* * * * * * * * * *

EXPLANATION

The IPO's form the major element of any plan using this format. First a goal is established at each level, then the IPO's are developed. From information contained in the IPO's, other tools, such as the networks, activity schedules, and flow charts, may be developed.

Activity: Program Development

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Project Consultants District Staff and Documents Needs Assessment Report (1.0)	2.0 Program Development The Project Staff will guide the development of the scope of the Magnet School using district teaching staff, Advisory Committee members, and expert consultants as resources. The Program Development will provide sufficient information from which educational specifications will be developed. The Program will support current and future career options and incorporate current related developments nationwide.	The Magnet School proposed instructional program, course offerings, and related supporting documents

Activity: Project Awareness

Level: II

INPUT	PROCESS	OUTPUT
Project output from all components Project Staff District Staff Groups Community Groups Professional Groups Other Governmental Agencies	3.0 Project Awareness The Project Staff will inform all interested groups of the project's existence and purpose. It will further encourage and facilitate direct project participation by representatives of such groups and make regular reports regarding project progress through a variety of media.	Dissemination materials, meeting agendas and summaries, etc., used to inform interested groups, on file in project office Persons interested in becoming involved in the planning process-a resource pool for the Community Advisory Committee

Activity: Coordinate Advisory Groups

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Chamber of Commerce List of prospective committee members	4.0 Coordinate Advisory Groups Project Staff will work with the Chamber of Commerce to identify and coordinate the activities of the various advisory groups working with the planning of this project. The Planning Staff will also work with or will coordinate the activities of internal advisory groups, independent of the planning groups developed in cooperation with the Chamber of Commerce.	Advisory committees appointed and organizational meetings scheduled

18

19

Activity: Educational Specifications

Level: II

INPUT	PROCESS	OUTPUT
Project Staff EdSpecs Planning Committee Program Development Output (2.0) Design Team	5.0 Educational Specifications The Project Staff will coordinate the development of educational specifications for the Magnet School. The EdSpecs will define the requirements of the Program, giving special attention to the emphases of the subject, and the designing of a facility which can be used as a student centered laboratory.	Approved EdSpecs document

Activity: Project Administration

Level: II

INPUT	PROCESS	OUTPUT
Project Director Project Staff Superintendent's Executive Planning Team Task Force	6.0 Project Administration The Project Staff will plan and administer the Project, according to an approved Management Plan, to insure a timely and quality project.	A Project Management Plan that will accomplish the Project objectives in a timely and efficient manner

Activity: Curriculum Development

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Curriculum Content Specialist Advisory Committee Members Consultants District RE&C Program Development Output (2.0) District Baseline Documents District Goals Statements	7.0 Curriculum Development The Project Staff will coordinate the development of the Magnet School curriculum, based on the earlier Program Development (2.0). Prospective staff members, the Advisory Committee, and expert consultants will assist. Specific instructional modules will be written to utilize the instructional methods and devices identified in Program Development (2.0). The modules will meet graduation requirements and District Baseline and Goals.	Magnet School Instructional Modules

54

55

Activity: Opening School Activities

Level: II

INPUT	PROCESS	OUTPUT
	8.0 Opening School Activities	
Project Staff	The Project Staff will develop detailed plans to insure that all activities necessary for the successful opening of the Magnet School have been identified and completed, including:	Materials and equipment received
Purchasing		Staff Development Plans implemented
Budget Office		Students scheduled
District Learning Services	. securing all materials and equipment	Magnet School Administrative Procedures manual written
Service Center	. staff inservice	
Data Services	. scheduling students	
Administrative Policies and Procedure Handbook	. school management and administrative procedures	

Activity: Facility Design and Construction

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Project Architect Advisory Committee Support Services Staff General Contractor	9.0 Facility Design and Construction The Project Staff will work in cooperation with the Project Architect and the Support Services staff to insure quality and timely construction or renovation of the Magnet School facility.	A completed facility meeting-stated specifications

53

59

Activity: Recruit Staff and Students

Level: II

INPUT	PROCESS	OUTPUT
Project Staff Building Principals Career Counselors Office for Alternative Education Personnel Recruitment Materials slides brochures Local Media Services	10.0 Recruit Students and Staff The Project Staff will identify staffing requirements and work in cooperation with the district personnel department to recruit teachers for the Magnet School Staff. The Project Staff will work in cooperation with the district instructional department and building principals to inform students regarding the Magnet School program and structure an active recruitment program.	Student and staff recruitment plans Full complement of certificated and classified staff Registered students

Activity Schedule

Level: II

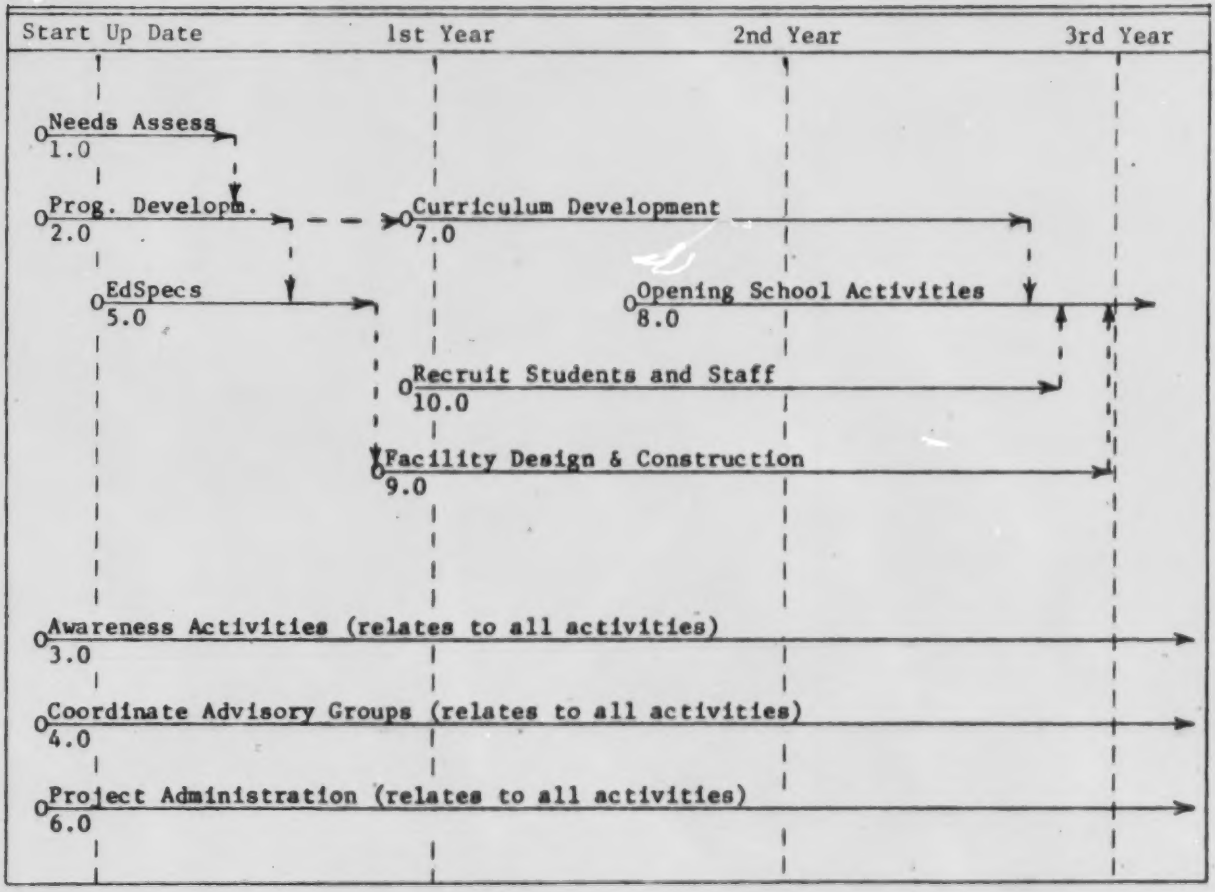
Network Number	Activity	Prerequisite	Begin Date	End Date	Responsibility
1.0	Needs Assessment				
2.0	Program Development	1.0			
3.0	Awareness Activities				
4.0	Coordinate Advisory Groups				
5.0	Educational Specifications	1.0, 2.0, 4.0			
6.0	Project Administration				
7.0	Curriculum Development	2.0			
8.0	Opening School Activities	7.0, 9.0, 10.0			
9.0	Facility Design and Construction	5.0			
10.0	Recruit Students and Staff				

Flow Chart

Level II

Draft

Date



This flow chart shows the relation of the various components of the plan over a three year planning period. This chart begins with the start up of the planning group and ends with the opening of the school. The start up of each activity is indicated by a circle shown at the appropriate time. The completion of an activity is indicated by an arrow and broken line which leads into a related activity. All purely planning activities culminate in the Opening School Activities. Several components - Awareness Activities, Coordinate Advisory Groups, and Project Administration are ongoing activities. This is indicated by an unbroken line ending in an arrow past the school opening date.

A flow chart can be developed to fit any time frame as long as the component paths are kept in the proper sequence.

This chart shows the project network for the second year at the third level of the plan. It is a continuation of the network on page 31 . This level shows the major activities included in each component named at level 2. It again shows the relationships of the components of the plan.

S7

S3

Activity: Needs Assessment

Level: III

INPUT	PROCESS	OUTPUT
	1.1 Post-High School Training Options	
Project Staff Community Advisory Committee Administrators of post-high school training options Project Consultants Institution catalogs Occupations Handbook E.R.I.C. Organized Labor District Career Counselors	The Project Staff will work with area schools and junior college districts as well as state-wide higher education institutions to determine the following: . current course offerings and/or programs of study related to careers in the school's subject area, . courses or programs of studies currently being planned in careers in the school's subject area, and . technical through professional training options.	A system of career categories for classifying courses of study and occupational options A document categorizing post-high school training options; reporting the institution, a brief program and course description, by: . degree programs, . concentrations, and . individual courses A document listing proposed degree programs, concentrations and individual programs, by institution

* * * * * * * * * * *

EXPLANATION

The IPO's form the major element of any plan using this format. First a goal is established at each level, then the IPO's are developed. From information contained in the IPO's, other tools, such as the networks, activity schedules, and flow charts, may be developed.

Activity: Needs Assessment

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Chamber of Commerce District Career Counselors Project Consultants U.S. Dept. of Labor - B.L.S. State Employment Commission Organized Labor Occupations Handbook System of career categories (1.1)	1.2 Local Current Employment Options The Project will identify related employment opportunities in the local area as they currently exist and as they are projected to be for the first Magnet School graduating class, finding the following to the extent available: . the current need, . the projected growth in specific employment opportunities, . the projected supply of qualified candidates, and . the range and level of employment options (semi-skilled, technical or professional).	A document listing the local employment options according to the system of categories (1.1) reporting need, growth, qualified work force, and range of employment options for the year of the first graduating class

Activity: Needs Assessment

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Chamber of Commerce District Career Counselors Project Consultants Economists U.S. Dept. of Labor - B.L.S. State Employment Commission Organized Labor S.W.E.P. materials Occupations Handbook System of career categories (1.1)	1.3 Local Future Employment Options The Project will identify anticipated subject area related local employment options (5-20 years), finding the following to the extent available: . the projected new careers employment opportunities, . the projected growth in existing and new employment opportunities, . the projected supply of qualified candidates, and . the range and level of employment options (semi-skilled, technical or professional).	A document listing the local subject area range of employment options for 5-20 years after the school opens

Activity: Needs Assessment

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Chamber of Commerce District Career Counselors Project Consultants Economists/Labor Market Experts U.S. Department of Labor State Employment Commission Organized Labor S.W.E.P. materials E.R.I.C. System of career categories (1.1)	1.4 Future Career Options The Project will identify emerging careers as they are projected over the next 5-20 years. The career options examined will include the expansion and/or modification of existing careers, as well as new careers emerging. The Project will identify technical through professional career options using a variety of area and nationally recognized experts.	A document listing the emerging occupational options in the subject area nationally by career categories (1.1) and degree of training required, listing projected work force needs

Activity: Program Development

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Advisory Committee and Subcommittees District related Program Administrators Project Consultants and Experts Other exemplary Program Directors (National) Project Administration (6.0) Budget output - cost effectiveness data Needs Assessment (1.0) output Program materials samples from exemplary national programs E.R.I.C. System District Course Offerings	2.1 Data Gathering and Analysis The Project Staff will: . examine current related instructional materials and programs in the district and nationwide, . review the Needs Assessment information (1.0), . get input from Advisory Committee regarding program needs, . interface with existing related district programs, and . get input from Project consultants.	A Deficiency Report, containing two major elements: . Discrepancy Analysis - between Needs Assessment output and district current offerings (4 matrices), projected to the year of first graduating class and 5-20 years beyond . Deficiency Priorities - based on input from the various data sources (e.g. Advisory Committee, consultants, Needs Assessment Report), cost effectiveness analysis, and recommend priorities

Activity: Program Development

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Superintendent's Executive Planning Team Community Advisory Committee Architect Cross-section of local industry (in addition to Advisory Com.) Support Services Staff - Architects District Ad Hoc Teacher Advisory Committee (voluntary) Needs Assessment Report (1.0) Data Gathering & Analysis Report (2.1) District Data and documents, including: . District Philosophy Statement . Research and Evaluation data and demographic . Planning staff reports from school and industry visits . Baseline and Superintendent Goals . Staff equipment evaluations E.R.I.C. Equipment Suppliers and Catalogs	2.2 Program Synthesis The Project Staff will: . identify program emphases and sub-emphases, . identify the philosophy of the school, including the instructional philosophy, . identify the characteristics of the learners, . develop the satelliting concept and simulate implementation, . develop the concept of the facility as a program teaching tool and simulate implementation, and . identify the proposed course offering list, describing the specific instructional methods, specialized equipment, and learning activities required.	Documents . Program course offerings, including course descriptions, terminal behavioral objectives, student activities, and special equipment . Preliminary building parameters . Philosophy Statement - School and Instruction . Characteristics of Learning . Satelliting Concept . Special Equipment Requirements . Design Implications of Program Emphases (building as teaching tool) . District approval of Magnet School Proposed Program and Course Offerings Report

Activity: Program Development

Level: III

INPUT	PROCESS	OUTPUT
	2.3 Liaison	
Project Staff Advisory Committee Project Auditor Project Evaluator Administrators of Related Programs Needs Assessment (1.0) Report	The Staff will use the management techniques identified in Project Administration (6.0) to insure a timely and successful product and will give special attention to: . seeking proactive and reactive input at all phases from the Advisory Committee, . keeping the audit and evaluation components active and involved, and . maintaining interface with existing and related district programs.	Advisory Committee approval of the Proposed Program and Course Offerings Report Final report of Advisory Committee on the proposed program Reports of auditor and evaluator regarding proposed program and program planning process Meeting agendas and summaries on file in Project office

Activity: Project Awareness

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Superintendent's Executive Planning Team Community Advisory Committee Project Consultants Program Development Output (2.0) District Communications Staff Output from Project Awareness Communications Tools (3.2), and EdSpecs	3.1 Project Awareness Concepts The Project Staff will prepare background materials needed to inform the various audiences of the project's scope, including the following: . program emphases, . career orientation, . location of the facility and the relationship of the site to the program, . proposed calendar for opening the school, . instructional satelliting concept, . future orientation, . facility as an instructional tool, and . identify those in the community involved in the planning. The background materials defined above will be updated as key decisions are reached within the planning schedule.	Information consolidated and written in a form usable for communications and release. The information will be revised periodically to report the current status of the project.

Activity: Project Awareness

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Task Force District Communications Staff District Instructional Resources Staff	3.2 Project Awareness Communications Tools In order to communicate an awareness of the project, the Project Staff will develop information to be released through a variety of communications tools. The communications tools are expected to include: . existing district communications organs, . Project logo, . a regular newsletter regarding the project, . regular and feature releases to the media as the project develops, . a brief information packet for use with individuals when discussing the project (i.e., industrial and/or professional group leaders), . a multi-media presentation to advise the general public of the project, and . a detailed multi-media presentation for groups with a special interest (i.e., principals).	Communications tools developed for use with the various groups identified in awareness activities (3.3) will be on file in the Project office.

Activity: Project Awareness

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Project Awareness Concepts Output (3.1) Project Awareness Communications Tools Output (3.2) Program Development Output (2.0) Planning & Management Parameters (6.2) Groups such as these will be informed of the Project: District Staff Groups . Task Force (Informal group of District Managers) . Principals . Counselors . Career Counselors . Students . School Board . District Administrative Decision Makers . District All Staff Groups Community Groups . Community Advisory Committee . Parents and Citizens . Chamber of Commerce	3.3 Awareness Activities The Project Staff will communicate project information to a variety of groups within the District and within the community. The materials will be prepared and presented in a format responding to the unique interest of the individual groups.	Communications tools, agendas, meeting notices, etc. will be on file in the Project office. Names of persons interested in becoming involved in the project will be made available to the Advisory Committee coordinators and be involved as appropriate. The listing of such interested persons will be on file in the Project office.

Activity: Project Awareness

Level: III

INPUT	PROCESS	OUTPUT
Professional Groups . Area/state higher education . Professional Societies . Press Club Related Governmental Agencies		

Activity: Coordinate Advisory Groups

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Task Force Chamber of Commerce Advisory Committee Manuals	4.1 Identify Advisory Groups' Purposes Prior to the identification and appointment of committees, the Project Staff will prepare documents for the proposed committees, including a definition of the purpose, responsibilities, and anticipated product of the committees.	Purpose statements for the appointed committees, such as the Community Advisory Committee, the Task Force, the Ad Hoc Teacher Committees

Activity: Coordinate Advisory Groups

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Chamber of Commerce Superintendent's Executive Planning Team Superintendent List of prospective committee members Names of interested persons (3.3)	4.2 Appoint Advisory Groups Interested persons will be appointed to serve on the various committees and groups, such as: the Community Advisory Committee and sub-committees, District Task Force, ad hoc teacher committees, Ed Specs Planning Committee. The Project Staff will work with the City Chamber of Commerce to recommend committee appointments representing the community and business/industry. The Staff will work with District Administrators to identify the District Task Force and ad hoc teacher committees.	The Community Advisory Committee and appropriate sub-committees appointed The Task Force, an informal committee of central office administrators, identified

Activity: Coordinate Advisory Groups

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Members of Advisory Groups Advisory Committee Organizational Guidelines and Manuals Information required by functioning committees	4.3 Advisory Group Organization The Project Staff, through the staff member serving as the advisor to each committee, will assist with the organization of the committee to insure the following: . the appointment and/or election of leadership, . the establishement of meeting date(s), goals, and task orientation, . insure communications between this committee and all other committees and sub-committees, and . assist the committee in obtaining any necessary information and/or support required to accomplish its tasks.	Documents showing: . names of designated leaders, . meeting schedules, . task assignments, . individual and sub-group responsibilities, and . intra-group communications plan Interim and final committee reports

95

96

Activity: Educational Specifications

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Possible EdSpecs Planning Committee Representation from: . Regional subject area professionals . District teachers and administrators . parents . students Advisory members, including: . Design team . District Architectural Staff . Project Consultants	5.1 EdSpecs Planning Committee In cooperation with the Project Advisory Committee, an EdSpecs Planning Committee will be appointed to develop the Magnet School EdSpecs.	Appointment of EdSpecs Planning Committee

97

98

Activity: Educational Specifications

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee EdSpecs Planning Committee Project Architects Project Engineers Project Construction Manager Design Team Consultants	5.2 Design Team Involvement The Project architect and members of the design team will consult with the Planning Staff and EdSpecs Planning Committee early and continuously throughout the Project, in order to accomplish the following: . communicate curriculum concepts and requirements accurately, . interpret program needs into possible design solutions and secure EdSpecs Planning group reaction, . develop early project cost estimates, . research designs responding to program uniqueness, i.e. subject matter applications, flexible services, etc., and . provide interaction on proposed design parameters and spatial relationships.	Documents on file in Project office, including: . sketches and planning schematics, . relationship diagrams . preliminary cost estimates, . Planning Committee meeting summaries, . Design Team alternative reports, and . Design Team life-cycle costing and cost effectiveness analyses. Scale model of facility

Activity: Educational Specifications

Level: III

INPUT	PROCESS	OUTPUT
	5.3 Facility Planning Parameters	
Project Staff EdSpecs Planning Committee Community Advisory Committee Design Team Task Force District Support Services Staff Planning & Management Parameters Output (6.2) Design Team Involvement Outputs (5.3) Preliminary Building Parameters Output (2.2)	The Project Staff and the EdSpecs Planning Committee, with District Support Services Staff and the Project design team, will develop the facility planning parameters, including but not limited to: . services . community use . facility as a student centered laboratory . satelliting . multiple life use . facility expansibility . facility flexibility . project budget . life cycle costing of selected elements . percentage of space for education	Planning Parameters included in EdSpecs document and reflected in preliminary design planning

101

102

Activity: Educational Specifications

Level: III

INPUT	PROCESS	OUTPUT
Project Staff EdSpecs Planning Committee Project Consultants Design Team Support Services Staff Task Force Program Development Output (2.0) Facility Planning Parameters Output (5.2)	5.4 EdSpecs Development The EdSpecs Planning Committee will define and the Project Staff will write educational specifications for the Magnet School, in order to communicate the Magnet School program requirements to the design team.	The EdSpecs document

193

194

Activity: Project Administration

Level: III

INPUT	PROCESS	OUTPUT
Superintendent's Executive Planning Team Executive Team Member with Project responsibility Personnel Office Project Director National Experts Staffing funds Adequate physical space	6.1 Establish Planning Group The full complement of planning staff will be identified and appointed. The Planning Staff will be provided sufficient office space for the duration of the Project to carry out Staff and Advisory Committee functions.	Full complement of Project Staff, assigned and working by set date. Project Staff permanently located in adequate space for the duration of the planning activities Project Auditor(s) and Evaluator(s) identified and contracts ratified

Activity: Project Administration

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee District Task Force Superintendent's Executive Planning Team Ed Specs Planning Committee Project Architect Project Consultants	6.2 Planning and Management Parameters Project Planning parameters will be identified and approved as soon as possible, from the following sources: . Superintendent and Executive Staff, including such concepts as: - target population - program emphasis - construction resources - Project resources and management . Planning Staff, including such concepts as: - management strategies - teaching strategies - data gathering plan - Satelliting . Facility Related, including such concepts as: - degree of flexibility - building as a teaching tool - design for multiple life use	A list of approved planning parameters for the Magnet School, the program, and the facility

197

198

Activity: Project Administration

Level: III

INPUT	PROCESS	OUTPUT
Community Advisory Committee Project Staff District Task Force District Research and Evaluation District Staff Project Auditor(s) Project Evaluator(s) Ratified Contract - Auditor(s) Ratified Contract - Evaluator(s)	6.3 Management Strategies Project management will accomplish Project Goals using management strategies, which will include the following: . Management plans, including the identification of goals, required resources, activities, products, responsible planner(s), and finishing dates will be developed for each Project component (i.e., Project administration, needs assessment, program development, educational specifications, staff and community awareness, construction, etc.), . audit and evaluation strategies, both internal and external, will be used to maintain the quality and timeliness of the planning process and interim products, and . Project management plans and activities will be graphically and systematically represented.	A management plan for the Project and each major component, including: . Project objectives, . anticipated products, . a calendar of completion dates, and . staff member responsible Approved audit evaluation plans

Activity: Project Administration

Level: III

INPUT	PROCESS	OUTPUT
Community Advisory Committee Project Director Project Staff Superintendent and Superintendent's Executive Planning Team School Board Project Auditor(s) District funding Foundation for Quality Education Federal Agencies	6.4 Budget The Project budget will be planned and administered by the Project Director. The Magnet School operational budget will be projected over a period of three or more years, and include a cost benefit analysis of the proposed instructional program.	Planning Project budget, approved annually Projected Magnet School operational budget (3 years) Magnet School curriculum cost effectiveness formula

111

112

Activity: Project Administration

Level: III

INPUT	PROCESS	OUTPUT
Project Staff Community Advisory Committee Task Force Superintendent's Executive Planning Team School Board Staff reports and presentations	6.5 Liaison The Project will insure continuous liaison with District Managers and Board through regular reports of plans and progress, in addition to the communications seeking input and/or decisions from these parties.	Acceptance of and/or receipt of area related reports and presentations

113

114

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff District Curriculum Department Staff District Curriculum Department Instructional Module Format	7.1 Instructional Module Format The project staff will work with the district curriculum department to establish the appropriate format for the instructional modules to be designed and written for the Magnet School.	An approved format for instructional modules, allowing for the unique organization of the Magnet School instructional program

115

116

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
The Approved Format (output 7.1) List of Potential Content Specialists Program Synthesis (output 2.2) Planning Staff Community Advisory Committee Principals Advisory Committee Teachers Advisory Committee Superintendent's Executive Planning Committee School Board	7.2 Draft Instructional Modules The project staff will: . identify and select the curriculum content specialists, . coordinate the development of the specific instructional modules in accordance with the approved curriculum, and . provide for individualizing the instructional modules including, but not limited to the use of computers and instruction. (e.g., C.A.I., C.M.I., etc.)	Draft versions of instructional modules for all subjects to be taught when the Magnet School opens

117

118

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
The Project Staff Principals Advisory Committee Teachers Advisory Committee District Research and Evaluation Staff Volunteer Teachers for Field Testing Draft Instructional Modules (7.2 output) Materials and Supplies Funds Transportation Funds (satellite field testing)	7.3 Field Test Instructional Modules The Project staff will coordinate the field testing of the selected draft instructional modules with volunteer staff throughout the district.	Selected instructional modules, field tested to check the content, the potential of the concept of external satelliting, and the potential of the concept of internal satelliting

119

120

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
The Project Staff Field Test Results (7.4 output) District Printing Staff Printing Funds	7.4 Revise and Print Instructional Modules The project staff will coordinate any revisions made necessary based on field test data and will insure that all graduation, district baseline and goal requirements are met in the final documents.	The staff will have successfully integrated instructional modules ready for in-service and use in the Magnet School during its opening year

121

122

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Community Advisory Committee Principals Advisory Committee Teachers Advisory Committee Alternative Program Administrators Magnet School Administrators Secondary School Principals Area Community College Districts Regional and State Technical Institutions State Colleges and Universities	7.5 Liaison The staff will use the management techniques identified in Project Administration (6.0) to insure a timely and successful product and will give special attention to: . seeking proactive and reactive input at all phases from the Advisory Committee, . maintaining interface with existing and related District programs, and . maintaining liaison with existing and related programs outside the District.	The staff will have successfully integrated instructional modules ready for in-service and use in the Magnet School during its opening year

123

124

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Principals Advisory Committee Teachers Advisory Committee Superintendent's Executive Planning Team/Development Council/ Learning Council Existing District Handbooks Administrative Policies Community Advisory Committee Architect Building Engineer	8.1 School Management and Administrative Procedures The planning staff in cooperation with the Advisory Committees will develop the following management tools: . student handbook, . teacher handbook, . staff handbook, . facility use handbook, and . the satelliting operations handbook.	The Planning Staff will coordinate the completion of handbooks for students, teachers, support staff, the facility as an instructional tool, and satelliting The above may be compiled as individual handbooks or may be incorporated into a larger handbook

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Community Advisory Committee Teacher Advisory Committee Planning Staff Equipment list (output 2.0) Supplies list District Purchasing Department (output 7.0) Approved textbook lists District Service Center Other Magnet School Directors	8.2 Materials and Equipment The project staff will assume responsibility for identifying, purchasing, and placing in the Magnet School facility the following categories of supplies: . texts, . movable furniture and equipment, . supplementary instructional materials, . library materials, and . specialized equipment.	The planning team will insure that all materials and equipment are in place and operational for the opening of school

127

123

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
The Planning Staff Sample Schedules The Principals Advisory Committee The Teachers Advisory Committee The District Student Transportation Services State Education Agency Requirements Magnet School Counselors Satellite Sites/Contact	8.3 Scheduling The project staff will gather the necessary information in order to schedule the students and programs, including the following: . students (instructional programs), . teachers (instructional programs), . student transportation, . satellite sites, and . teaching stations within the facility.	The planning staff will coordinate the development of workable schedules for teachers, students, transportation, and satelliting

129

130

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
The Planning Staff Superintendent's Executive Planning Team Magnet School Staff Project Consultants District Staff Development Satellite Contacts Learning Directors State Education Agency Consultants Staff Development In-Service Materials Instructional Techniques Paper (output 2.2) School Management and Administrative Procedures (output 8.1) Scheduling (output 8.3)	8.4 Inservice The project staff will assume responsibility to develop and present in-service programs for the Magnet School staff during the school year and the summer preceding opening. It is anticipated that the inservice will be conducted during staff development time (within the school calendar) and a staff retreat during the summer preceding opening. The inservice will include necessary information to initiate the programs, such as: . the schools philosophy, . the Magnet School curriculum, . the appropriate use of the Magnet School curriculum, . the satelliting concept and satelliting sites, and . instructional methodology and techniques at the Magnet School facility. The project staff and teachers will cooperatively develop individual departmental and school goals during this inservice time.	The planning staff will coordinate the in-service activities resulting in the professional staff being fully acquainted with the program and operation of the Magnet School, and in instructional goals being written for the Magnet School curriculum

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Superintendent's Executive Planning Team Magnet School Staff Project Consultants Staff Development In-Service Materials The Assistant Superintendent for Business Services The Assistant Superintendent for Support Services	8.5 Support Staff The project staff will assume responsibility to work with the District Personnel Department in the selection, hiring, and training of support staff, including: . secretaries, . custodians, . food service personnel, and . laboratory aids. The inservice program will be designed to acquaint the staff members with their specific tasks in addition to the philosophy and overall program of the Magnet School.	The project staff will coordinate the in-service training of the Magnet School support staff, insuring that the support staff is familiar with the operational aspects of the facility and that the support staff is acquainted with the instructional program and instructional goals of the Magnet School

133

134

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff District Support Services Staff Project Architect Project General Contractor Project Construction Manager	9.1 Construction Coordination The project staff will work with the staff of support services to insure that the facility meets educational specifications and program needs. The staff will also assist with the ongoing supervision of the project as requested and required, through the direction of the support services branch.	A facility planned and constructed in accordance to the educational specifications and design specifications, developed and approved for the Magnet School

135

136

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Principals Advisory Committee Teachers Advisory Committee Personnel Department District Communications Division	10.1 Development of Recruitment Materials The Project Staff will work in cooperation with the District Personnel Office to develop the following: . define the job descriptions or roles of the vacancies for the Magnet School, both professional and paraprofessional positions, . develop recruitment materials for the awareness campaign during the initial recruitment, . develop awareness materials to be distributed to the 7th grade during the spring a year prior to opening, and . develop miscellaneous recruitment materials and brochures.	Student and staff recruitment materials will be developed and printed for use in the recruitment and selection of staff and students

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Community Advisory Committee Principals Advisory Committee Teachers Advisory Committee Personnel Department	10.2 Staff Recruitment The project staff will work in cooperation with the District Personnel Office to accomplish the following: . identify staff selection criteria, . develop selection procedures including procedures for the following: anouncement of vacancies, screening and interviewing potential staff, and the selection and notification of those candidates, . select staff members according to the following schedule, key staff members, (i.e. department chairmen) and teachers to transfer to within the District in the spring a year in advance and full staff selection during the winter and spring preceding opening, and . maintain liaison with the selected teachers and their home school administration during and after the selection process.	The project staff will have developed a recruitment strategy for the selection of Magnet School staff and will have recruited a full complement of allocated staff for the opening of school

Activity: Curriculum Development

Level: III

INPUT	PROCESS	OUTPUT
Planning Staff Principals Advisory Committee Teachers Advisory Committee Student Recruitment Schedule Magnet School Student Recruitment Representative Assistant Superintendent for Alternative Education	10.3 Student Recruitment The project staff will assume responsibility for coordinating the following student recruitment activities: . orienting the middle school principals and counselors and secondary school counselors, career counselors, and deans of instruction; this orientation will consist of a survey of the program and detailed information for the middle school staff members, . maintaining liaison with other magnet schools and CDC's, and . recruiting through the regular recruitment processes during the school year preceding opening. The project staff will develop an awareness strategy, with the assistance of the Advisory Committees, to inform the District staff and the community as a whole regarding the Magnet School and its program. The purpose of the awareness strategy will be informational while avoiding statements and activities that could lead to an oversell.	The project staff will have developed a student recruitment strategy acceptable to all parties affected and will have recruited the students for the opening year of the Magnet School program

Activity Schedule

Level: III

Network Number	Activity	Prerequisite	Begin Date	End Date	Responsibility
1.1	Post High School Training	6.1			
1.2	Local Current Employment Options	4.2, 1.1			
1.3	Local Future Employment Options	4.2, 1.1			
1.4	Future Career Options	1.3, 412, 1.1			
2.1	Data Gathering & Analysis	1.1, 1.2, 1.3, 1.4, 6.4, 4.2			
2.2	Program Synthesis	2.1, 5.2			
2.3	Program Liaison	4.2			
3.1	Awareness Concepts	2.1, 2.2, 4.2, 5.3, 5.4, 6.2, 6.3			
3.2	Communications Tools	3.1			
3.3	Activities (to accomplish)	3.1, 3.2			
4.1	Committees' Purposes				
4.2	Appoint Committees	4.1, 6.3			
4.3	Organize Committees	4.2			
5.1	Appoint Ed Specs Committee	4.2, 4.3			
5.2	Design Team Involvement	5.1, 6.1, 6.2,6.3			
5.3	Planning Parameters	2.2, 5.1, 5.2, 6.2			
5.4	Write Ed Specs	2.2, 5.1, 5.2 5.3			
6.1	Planning Group Appointed				
6.2	Planning Parameters	6.1			
6.3	Management Strategies	6.1			

Activity Schedule

Level:

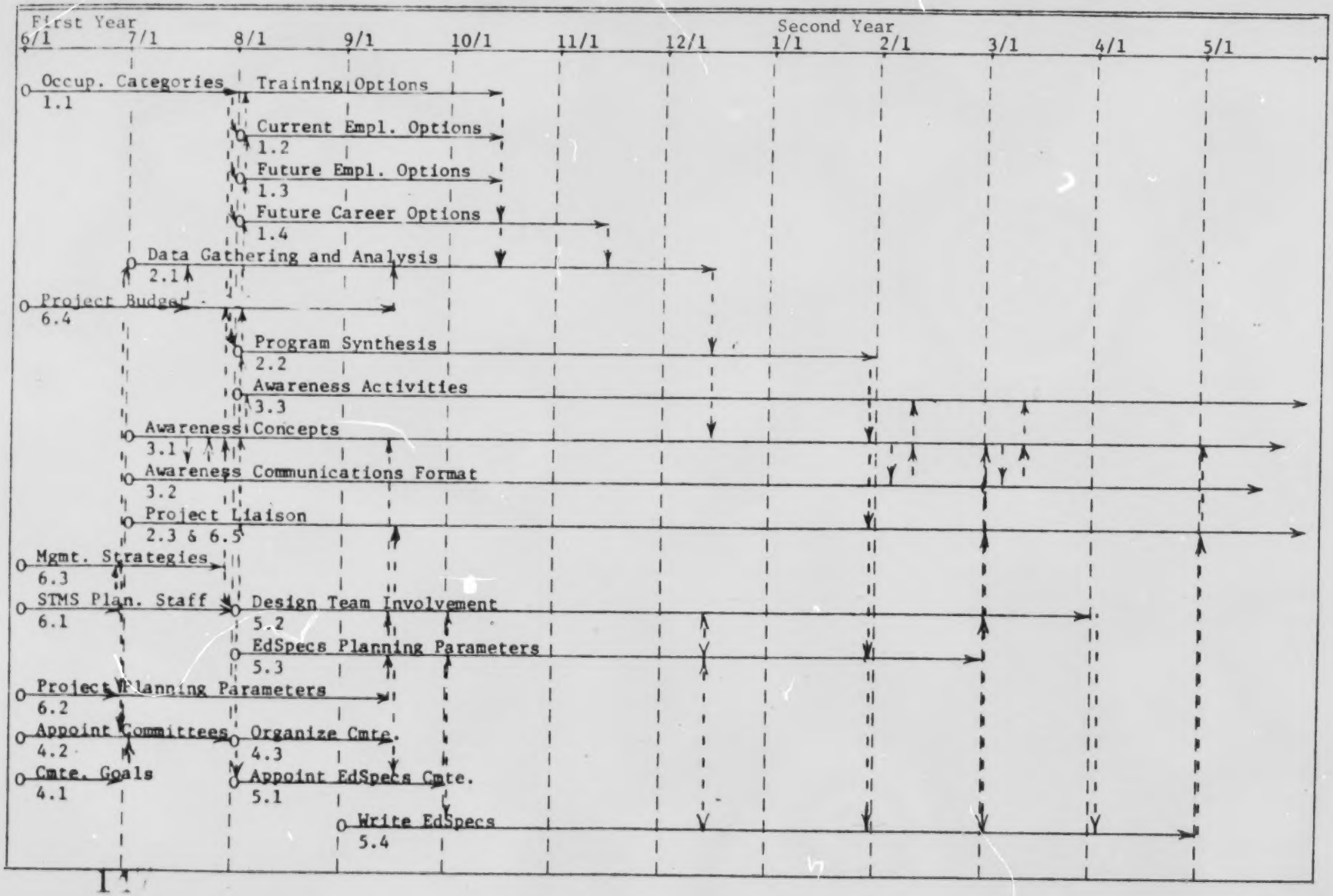
Network Number	Activity	Prerequisite	Begin Date	End Date	Responsibility
6.4	Budget	6.1, 6.3			
6.5	Liaison	4.2, 5.1, 6.1			
7.1	Instructional Module Format				
7.2	Draft Instructional Modules	2.2, 7.1, 10.1, 10.2			
6.3	Field Test Instructional Modules	2.2, 6.1, 6.5, 7.2			
6.4	Revise and Print Instructional Modules	4.1, 4.2, 4.3, 6.1, 6.2			
6.5	Liaison				
8.1	School Management and Administrative Procedures	6.1, 4.1			
8.2	Materials and Equipment	6.1, 4.1, 2.2, 7.0			
8.3	Scheduling	6.1, 2.2, 8.1, 8.3, 10.2			
8.4	Support Staff	6.1			
9.1	Design and construct coordination	2.2, 5.4			
10.1	Development of recruitment materials	6.1, 4.1, 3.2			
10.2	Staff recruitment	6.1, 4.1, 5.4, 10.1			
10.3	Student recruitment	6.1, 4.1, 10.1			

Flow Chart

Level III

Draft

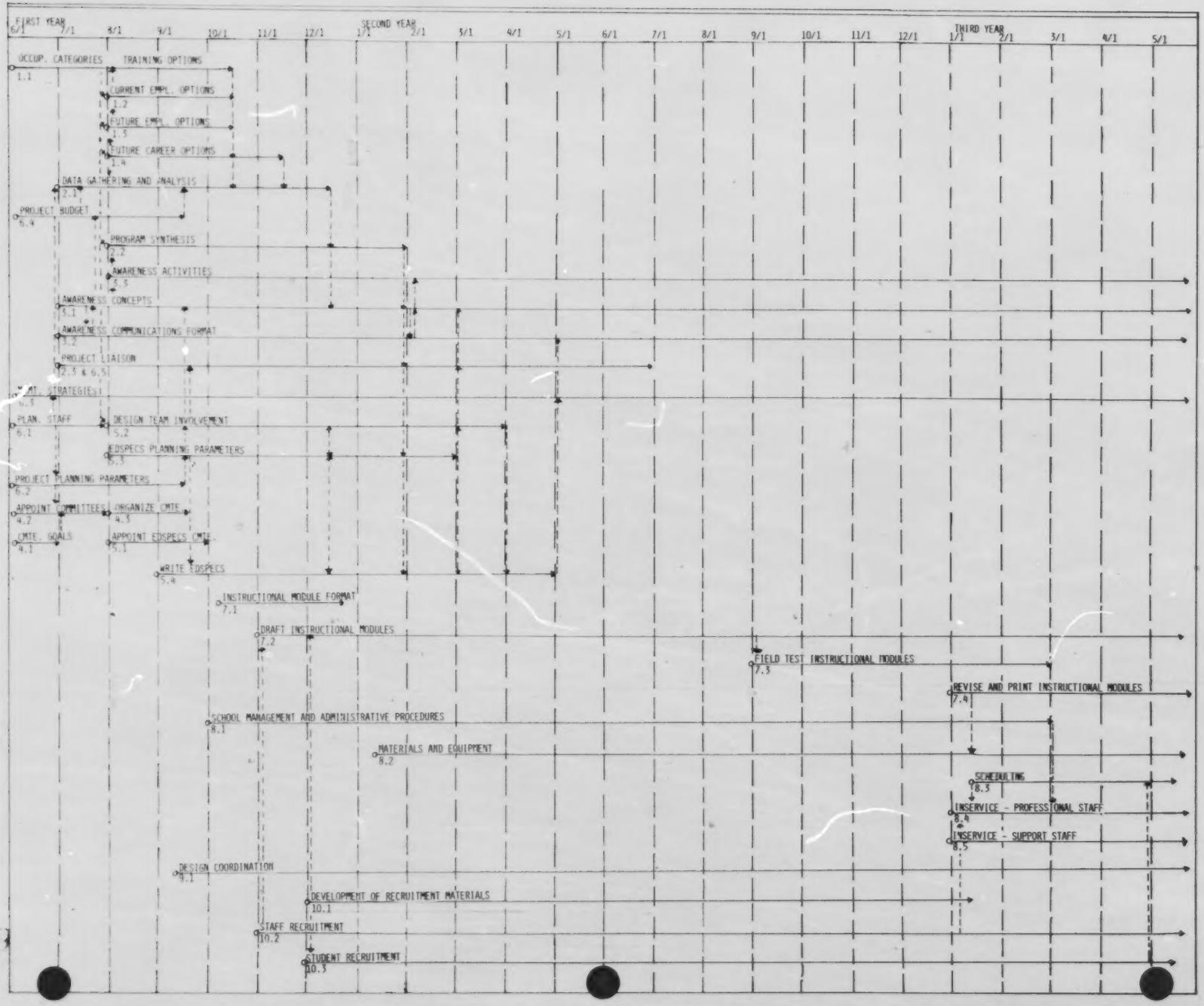
Date



Section of flow chart at Level III

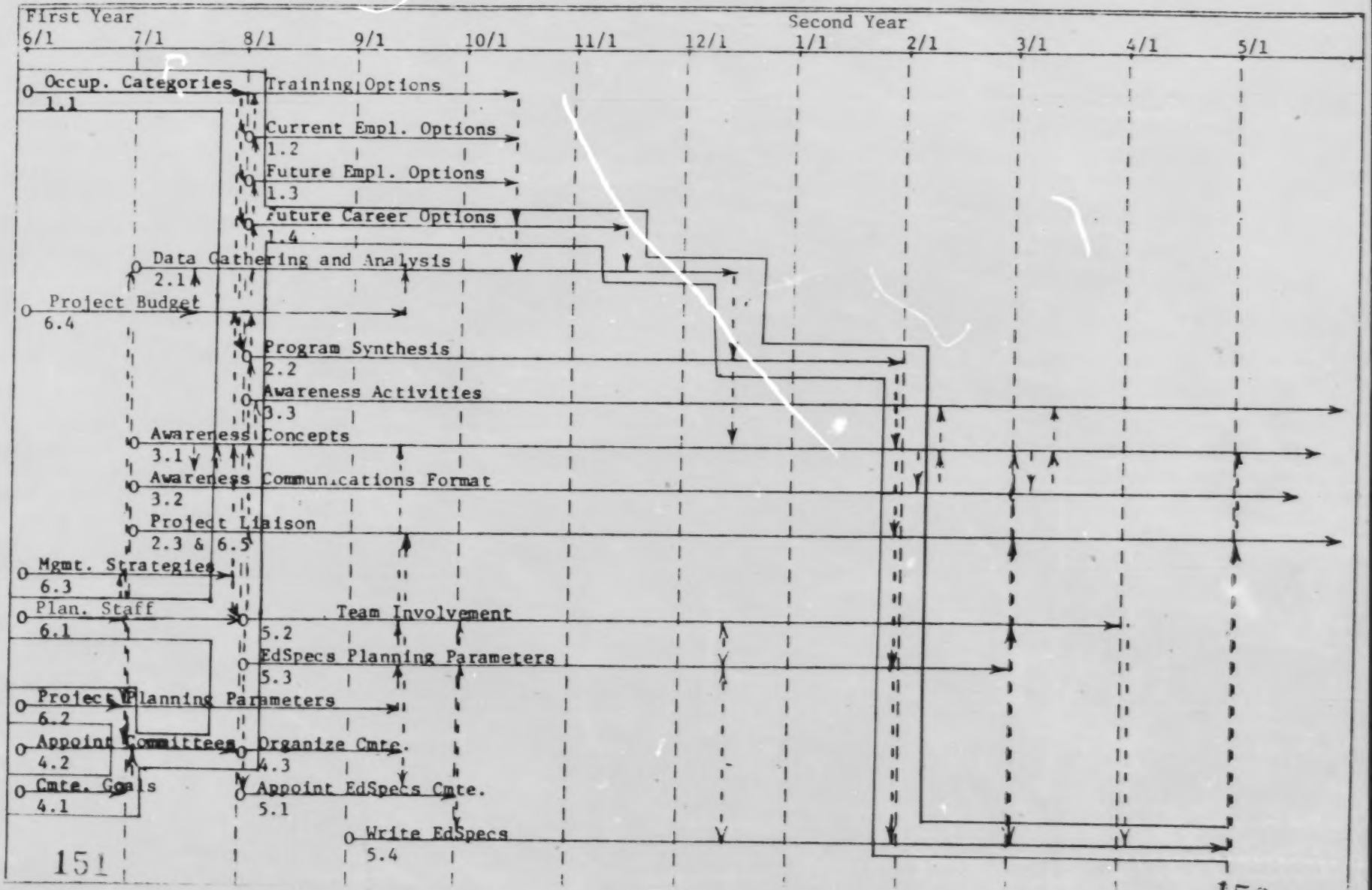
FLOW CHART

LEVEL III



Flow Chart = Critical Path Draft

Level III Date

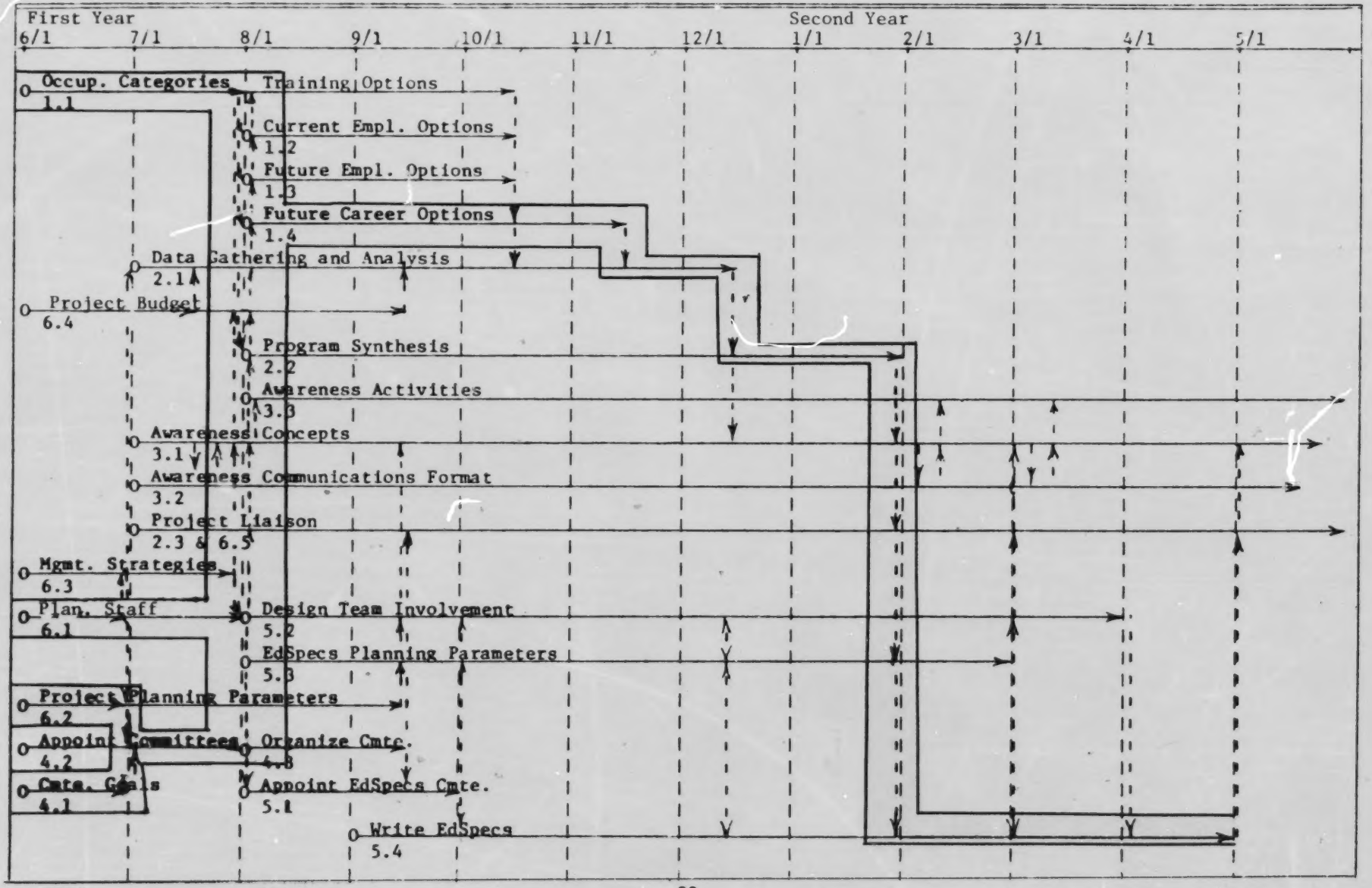


151

152

Flow Chart = Critical Path Draft

Level III Date



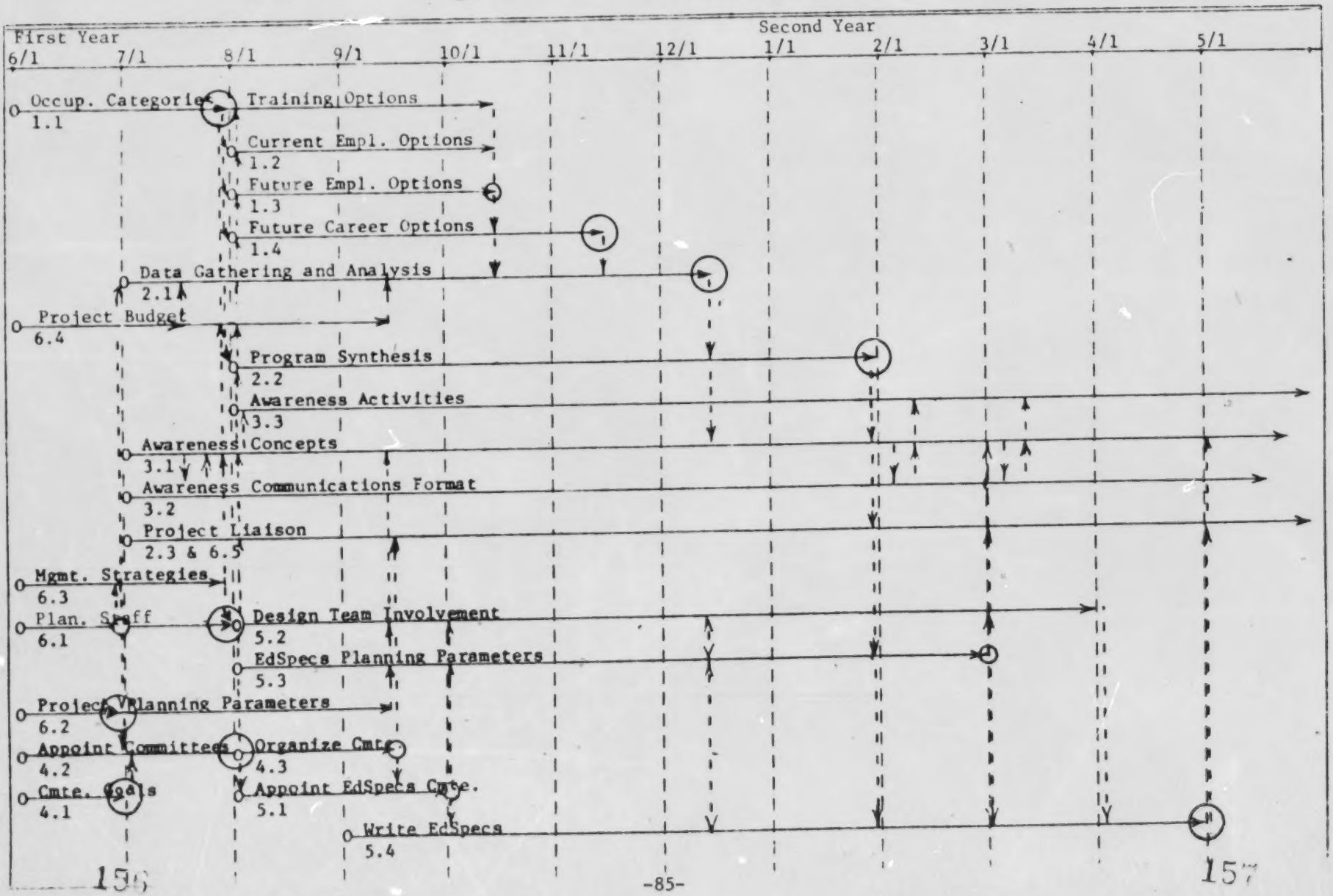
The critical path, shown in blue indicates the activities which must be done in the proper sequence and by the date specified in order to keep the planning sequence on schedule.

1

155

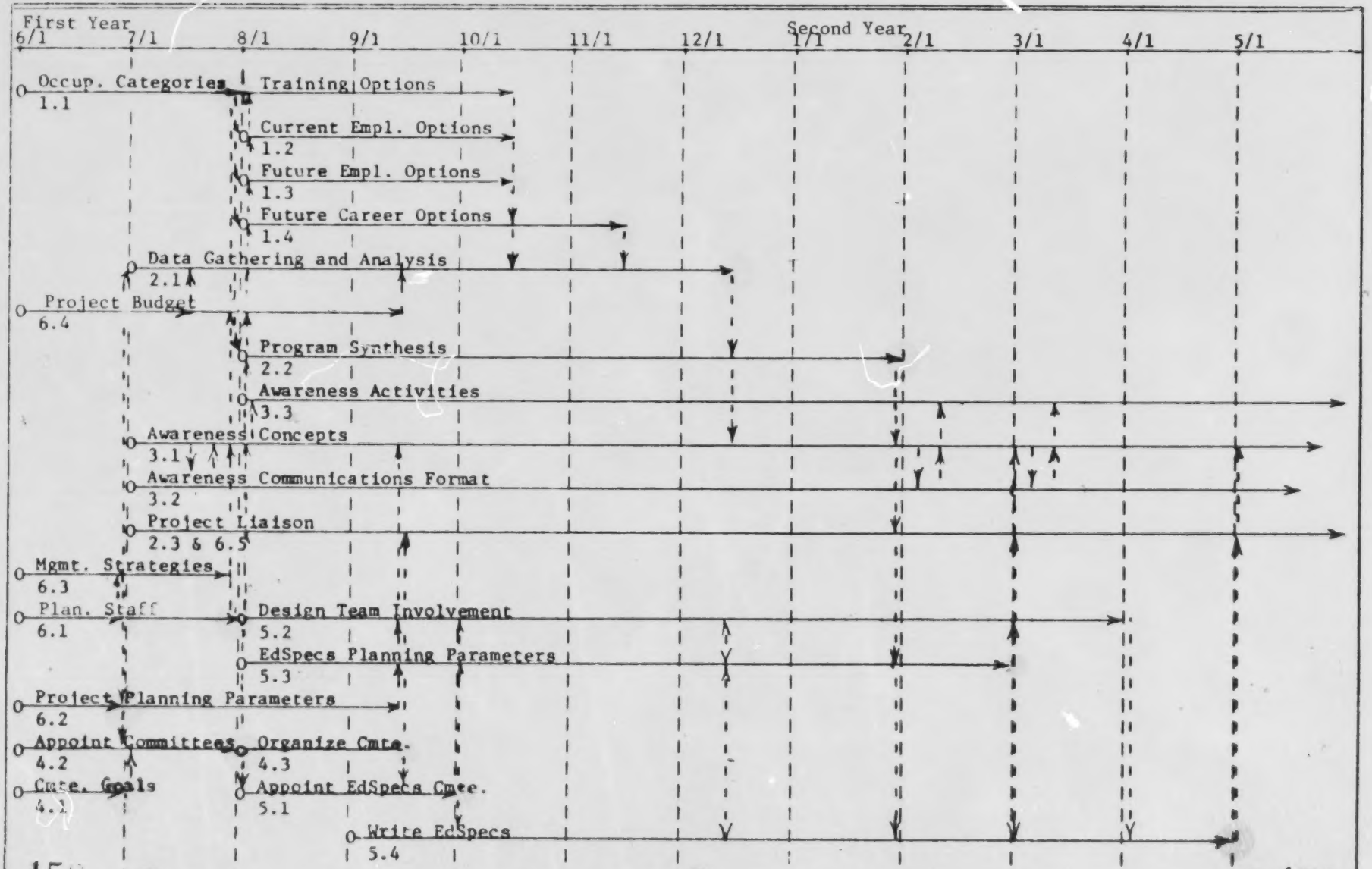
Flow Chart ○ = Major Critical Points Draft

Level III ○ = Minor Critical Points Date



Flow Chart = Major Critical Points Draft

Level III = Minor Critical Points Date



This Flow Chart has been highlighted to show the major critical points - ◯ - and the minor critical points - ○ - in the planning sequence. Major critical points indicate the interdependence of several subsequent activities. It signals the need to have accomplished specific tasks at that point in order to proceed. The minor critical points are an indicator that one subsequent activity is dependent upon the completion of specific tasks at that point in the plan.

Critical points alert the planning team to specific activities which must be accomplished by a certain date in order to keep the planning process moving on schedule.

160

161

Magnet School Planning Project

First Year Critical Dates

Critical Dates Major	Critical Dates Minor	Activity	Network Number	District Approval
		Planning & Management Parameters	6.2	
		Identify Advisory Groups' Purposes	4.1	
		Establish Planning Group (District component)	6.1	
		Appoint Advisory Groups	4.2	
		Occupational Categories	1.1	
		Establish Planning Group	6.1	
		Advisory Group Organization	4.3	
		Appoint EdSpecs Planning Committee	5.1	
		Regional Future Employment Options	1.3	
		Needs Assessment	1.0	
		Data Gathering and Analysis	2.1	
		Program Synthesis	2.2	
		Facility Planning Parameters	5.3	
		EdSpecs Development	5.4	

160-A

161-B

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
1.1	Post High School Training						
1.1.1	Identify Schools/Contacts at Tech Schools, J.C. Dist., State & Private Colleges		15	90			
1.1.2	Get Current course of studies/class list	1.1.1	15	90			
1.1.3	Identify "related" descriptors categories	1.1.2	10	30			
1.1.4	Identify related courses of studies/classes	1.1.2	5	15			
1.1.5	Identify degree/level of courses offered	1.1.4	2	10			
1.1.6	Identify planned program expansion	1.1.1	25	15			
1.1.7	Identify projected enrollment in related programs	1.1.1	10	15			
1.1.8	Report related courses of studies/classes by descriptor categories, by institution and by degree of professional training.	1.1.3, 1.1.4, 1/1/5; 1.1.6	10	15			
1.2	Local Current Employment Options						
1.2.1	Identify Data Sources, i.e., TEC, BLS, CAC, 1.1 Data	1.1.1; 1.1.6	1	5			
1.2.2	Collect Data (need, growth, work-force, skill level)	1.2.1	10	5			
1.2.3	Analyze & Report Findings	1.2.2	15	13			

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
1.3	Local Future Employment Options						
1.3.1	Identify Data Sources (Gov't., Industry, etc.)	1.1.1	1	1			
1.3.2	Collect Data (new & expansion, workforce, skill level)	1.3.1	15	15			
1.3.3	Analyze and develop preliminary findings	1.3.2	10	15			
1.3.4	Review of findings by "experts" and revise as appropriate	1.3.2	25	20			
1.3.5	Prepare a findings report	1.3.4	5	10			
1.4	Future Career Options						
1.4.1	Identify Data Sources - Documents and Consultants	1.1.1; 1.3.1	1	4			
1.4.2	Collect Data	1.4.1	10	10			
1.4.3	Analyze, synthesize and report	1.4.2	10	10			
1.4.4	Get consultant review reports of preliminary findings	1.4.3	15	15			
1.4.5	Prepare a findings report	1.4.4	15	35			
1.4.6	History of Magnet schools		5	40			
2.1	Data Gathering and Analysis						
2.1.1	Develop and classify positions by categories ranging from mechanics through professional careers						
2.1.2	List all programs related to subject area presently offered in the district by categories (i.e., preprofessional, technical, etc.)	2.1.1	5	20			
2.1.3	Contact and prepare brief descriptions of selected programs offered nationwide		20	30			

Activity Schedule Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
2.1.4	List unmet present and future employment needs	1.1; 1.2; 1.3; 1.4	10	45			
2.1.5	Receive input from community advisory committees	2.1.2; 2.1.3; 2.1.4	20	15			
2.1.6	Identify programming interface requirements with existing district programs and document the interface activities together with any preliminary decisions resulting from activities	2.1.2; 2.1.5	10	30			
2.1.7	Prioritize deficiencies	4.0; 6.0; 2.1.5	25	45			
2.2	Program Synthesis						
2.2.1	Identify the program emphases and sub-emphases for approval		3	30			
2.2.2	Prepare written description of courses of study designed to remedy deficiencies (2.1.5)	2.1	25	180			
2.2.3	List special equipment/space/facility needs of courses and program	2.2.2; 6.4	10	15			
2.2.4	Prepare written description of all student groups anticipated to be served	1.0	5	15			
2.2.5	Write school and instructional philosophy statement	1.0; 4.0	25	120			
2.2.6	List features needed in building to carry out unique program	2.2.1; 2.2.3; 2.2.5	10	45			
2.2.7	Write description of "Satelliting" as a program component, giving specific example of its probable use		25	15			
2.2.8	Submit report incorporating all of 2.2.1 thru 2.2.7 for administrative and board approval		15	30			

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
2.3	Program Liaison						
2.3.1	Review course offerings with advisory committee (if possible)	2.2.1; 4.0	5	45			
2.3.2	Obtain final report from advisory committee	2.3.1	2	60			
2.3.3	Omit						
2.3.4	Omit						
2.3.5	Make regular and scheduled contacts to review pertinent planning with Directors of related district programs	2.1.6	10	Project			
2.3.6	Maintain up-to-date files of meeting agendas & summaries		55				
3.1	Awareness Concepts						
3.1.1	Write a brief description of the program and its unique features	2.2.7	5	45			
3.1.2	Prepare a written statement on the satellit-ing concept in layman's terms	2.2.6	5	45			
3.1.3	Prepare a written description of the school plant, its location and design to meet program needs		25	150			
3.1.4	Prepare a communication identifying those in the community involved in planning		2	90			
3.1.5	Prepare a preliminary calendar showing the key events leading to the opening of school		1	30			

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
3.2	Communications Tools						
3.2.1	Establish contact with district publications staff to schèdule regular schedule of intra-district news release	3.1.1; 6.5	1	60			
3.2.2	Select logo design for magnet school & use appropriately on stationery, etc.		10	150			
3.2.3	Prepare to publish regular newsletter by determining format, establishing a schedule of publication, developing a mailing list, and securing services needed for printing and distribution	6.4.1	15	150			
3.2.4	Develop information about each "major" or program thrust in brief form to be printed in "folder"	2.0; 6.4.1	25	330			
3.2.5	In cooperation with the communications department, develop at least two slide presentations suitable for general public as well as for special groups. Prepare leader's script and information packet to accompany the presentations.	2.0; 5.0	45	330			
3.3	Activities (to accomplish)						
3.3.1	Maintain current information in readily retrievable form in project office	3.2.3; 3.2.4; 3.2.5	55	3 years			
3.3.2	Develop list of persons willing and able towork with project, and update list frequently	4.0; 6.5	35	3 years			

170

171

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
4.1	Committees' Purposes						
4.1.1	Contact district for current documents dealing with definition, purpose, and responsibilities of Advisory Committees		4	15			
4.1.2	Review State Education Agency Documents for information		2	15			
4.1.3	Review San Jose, California Document for information		2	15			
4.1.4	Prepare a Magnet School Document detailing the purpose, responsibilities, anticipated product of the committees, and expected time of service on a committee	4.1.1; 4.1.2; 4.1.3	20	30			
4.2	Appoint Committees						
4.2.1	Contact Chamber of Commerce for possible names of committee members		5	120			
4.2.2	Determine most appropriate method for contacting those persons and seeking their service		1	15			
4.2.3	Contact district for names of possible participants on the internal advisory group		20	45			
4.2.4	Solicit possible advisory group members from industrial business contacts		20	45			
4.2.5	Contact persons and secure commitment to work on an advisory group or Ad Hoc committee	4.2.1; 4.2.3; 4.2.4; 4.1.4	20	45			

172

173

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
4.2.6	Omit						
4.2.7	Submit prospective Ad Hoc teacher committee names to the District Administration for confirmation and formal appointments	4.2.5; 4.2.3	5	15			
4.2.8	Submit prospective Ad Hoc principals committee names to District for confirmation and formal approval		5	15			
4.3	Organize Committees						
4.3.1	Assign planning staff members to each committee or advisory group		2	15			
4.3.2	Establish first committee meeting date, time, and place	6.1.5; 4.2.5; 4.2.6; 4.2.7					
4.3.3	Secure names of persons elected to leadership	4.3.3	5	15			
4.3.4	Establish overall goals and tasks for the committee	4.1.4	5	15			
4.3.5	Set meeting times, dates, and places for future meetings		5	30			
4.3.6	Obtain any information necessary and provide to committee members	1.4.4; 6.5.3; 2.2.7	35	3 years			
4.3.7	Establish necessary communications links between committee members, planning staff members and District Administration members and Chamber of Commerce, etc., and effect appropriate communications. Review the communications links regularly (at least semi-annually) to determine their effectiveness and appropriatcness.		35	3 years			

174

175

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
5.1	Appoint EdSpecs Committee						
5.1.1	Identify prospective members of the EdSpecs Planning Committee	3.1.1; 6.1.1; 4.2.3	10	30			
5.1.2	Submit names to District Administration for approval and formal appointment	5.1.1	2	15			
5.1.3	Meet with EdSpecs Planning Committee, define role, priorities, time frame, expected output	5.1.2; 6.1.5	5	30			
5.2	Design Team Involvement						
5.2.1	Review course offerings to determine types of special facilities required	2.2.1; 2.2.2; 2.2.5	2	120			
5.2.2	Review course offerings/equipment list to determine types of utilities and services required	2.2.2; 2.2.5	2	30			
5.2.3	Prepare facility parameters and include in EdSpecs preliminary draft	2.2.5; 2.2.5	25				
5.2.4	Determine what, if any, alternate energy sources are suitable for use in the building	2.2.5; 6.2.5	25	180			
5.2.5	Determine funds available for building construction	2.2.5	2	30			
5.2.6	Determine source and funds for furnishing and equipping the facility	6.4.1	2	150			
5.2.7	Review program concepts for possible impact on building and site; document in Ed Specs	5.2.3	2				
5.2.8	Determine type and extent of expansibility and flexibility desired	6.2.5	10	90			

Activity Schedule Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
5.3	Planning Parameters						
5.3.1	Architect will evidence an understanding of the program through preliminary sketches and elevations presented for Planning Committee approval	2.2.5	5	180			
5.3.2	Architect will present scale model of preliminary design for planning staff approval	5.3.1	5	60			
5.3.3	Planning Committee will identify questions and assist architect in any way possible in determining answers to questions concerning building use, features, equipment, equipment costs	2.2.7; 6.4.1; 5.4.2	25	150			
5.3.4	Architect will assist planning staff and EdSpecs Planning Committee development of a viable cost estimate	5.2.9; 5.3.1; 5.3.2	10	180			
5.4	Write EdSpecs						
5.4.1	Architect, Advisory Committee and planning staff cooperatively develop information leading to the Ed Specs	2.3.2; 2.3.3	25	150			
5.4.2	Planning staff drafts the EdSpecs Document in cooperation with project consultants	5.4.1	15	75			
5.4.3	Planning Committee reviews and revises EdSpecs Document as necessary	5.4.2	10	30			
5.4.4	Planning Committee presents EdSpecs Document to the District for approval	5.4.3	2	60			

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
5.4.5	Final EdSpecs Document submitted to architect for directing the total design of the Magnet School, staff continue to work regularly to interpret EdSpecs for A/E staff	5.4.5	2	300			
6.1	Planning Group Appointed						
6.1.1	Select and secure approval of the planning team leader, Assistant Principal/Planner, Dean of Instruction/Planner, Senior Planner, Coordinator/Planner, Planner, and Program Writer		70	105			
6.1.2	Acquire office space for the total Planning Staff	6.1.1	45	60			
6.1.3	Purchase office supplies needed for the entire Planning Team	6.1.1; 6.1.2	15	45			
6.1.4	Establish telephone service	6.1.2	10	45			
6.1.5	Select and equip a suitable room for the various Advisory Committee meetings	6.1.2; 6.1.4	5	45			
6.2	Planning Parameters						
6.2.1	Design the Project Management Plan using "Networks," IPO's, and Flow Charts	6.1.1	45	45			
6.2.2	Secure approval for the above Management Plan from the Superintendent and Executive Staff	6.2.1	5	30			

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
6.2.3	Develop Planning Staff recommendations and secure administrative approval for such concepts as: . target population . program emphasis . construction resources . project resources and management	6.1.1; 6.1.2; 6.1.3; 6.1.4	25	60			
6.2.4	Develop Planning Staff recommendations . the management strategies to be used . the teaching strategies to be used . the data gathering plan . the parameters for satelliting	6.1.1; 6.2.1	15	30			
6.2.5	Develop Planning Staff recommendations for the following facility related concepts: . the degree of flexibility . using the building as a teaching tool . the building design for multiple life use . utilization and/or adaptability for alternate energy sources	6.1.1; 6.1.5	15	90			
6.3	Magnet Strategies						
6.3.1	Develop goals and specific objectives for each major component of the Management Plan	6.2.1; 6.2.3; 6.2.4	25	75			
6.3.2	Identify and list the needed resources, activities, and products for each component in the Management Plan	6.2.5; 6.2.2	25	30			

193

193

Activity Schedule

Revised

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
6.3.3	Name the responsible planners and indicate the finishing dates for each component in the Management Plan	6.1.1; 6.2.2	2	30			
6.3.4	Name the audit and evaluation team to be used to maintain the quality and timeliness of the planning products		10	45			
6.3.5	Present the Management Plan and activities in a graphic as well as a systematic form and activity schedule	6.3.1	10	45			
6.4	Budget						
6.4.1	Develop and administer a two year project budget	6.3.2	70	3 years			
6.4.2	Construct a cost benefit analysis of the planned instructional program		45	180			
6.4.3	Explain the proposed budget to the budget committee	6.4.1	15	3 years			
6.4.4	Magnet School Project Budget						
6.5	Liaison						
6.5.1	Develop strategies to insure continuous liaison with other District Managers	3.3.1	25	3 years			
6.5.2	Construct progress reports to be submitted to the Administrative Staff every two weeks	3.3.1	25	3 years			
6.5.3	Develop written documents with staff recommendations designed to seek input and/or decisions from District Managers	-	10	3 years			

Activity Schedule Curriculum Development

Level: IV

twork mber	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
7.1	Instructional Module Format						
7.1.1	Inservice Planning team in instructional module format		1	5			
7.1.2	Inservice Magnet School content specialists in district instructional module	7.1.2	3	5			
7.2	Draft Instructional Modules						
7.2.1	Identify curriculum content specialists	4.3; 2.3	2	20			
7.2.2	Appoint content specialists	7.2.1	.5	10			
7.2.3	Develop work and pay schedule for writers	7.2.2	1	5			
7.2.4	Prepare first draft of instructional modules in selected areas	7.2.3; 2.2	60	120			
7.2.5	Review draft modules for inclusion of individualized instruction	7.2.4	20	40			
7.2.6	Prepare draft of all other modules	7.2.3	60	120			
7.3	Field Test Instructional Modules						
7.3.1	Select sites for field testing of modules	7.2	2	6			
7.3.2	Develop and communicate evaluation procedures with all field test personnel	7.3.1	2	10			
7.3.3	Schedule time and modules for each field test site	7.3.1	2	10			
7.3.4	Use instructional modules in classrooms	7.3.3	60	100			
7.3.5	Evaluate field test experience	7.3.4	5	10			

Activity Schedule Activity Schedule

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
7.4	Revise and print instructional modules						
7.4.1	Assemble and analyze field test data and evaluation	7.3	10	20			
7.4.2	Revise instructional modules as needed	7.4.1	20	20			
7.4.3	Print revised instructional modules	7.4.2	20	20			
7.5	Liaison						
7.5.1	Review curriculum development activities with advisors and with managers of other programs in and outside the district	7.1; .72; 7.3; 7.4	CONTINUOUS				
7.5.2	Review new programs in the district and Jr. Colleges to assess relationship		CONTINUOUS				

198

198

Activity Schedule Opening School Activities

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
8.1	School Management and Administrative Procedures						
8.1.1	Secure as many samples of current District Student, Faculty, and Staff Handbooks as possible		5	30			
8.1.2	Review handbooks for content, format, and applicability	8.1.1	10	45			
8.1.3	Review applicable District Policy and Regulation Statement		5	60			
8.1.4	Prepare first draft of Student Handbook	4.1; 3.1	15	90			
8.1.5	Prepare first draft of Faculty Handbook	4.1; 3.1	15	90			
8.1.6	Prepare first draft of Staff Handbook	4.1; 3.1	15	90			
8.1.7	Prepare first draft of Facility Use and Satellite Operations Handbook	3.1	15	90			
8.1.8	Submit handbooks to appropriate Advisory Committees, Administrative committees for review and comment	4.1	10	90			
8.1.9	Revise and print the Student, Faculty, Staff, and Facility Handbooks		60	75			
8.2	Materials and Equipment	7.0					
8.2.1	Identify and purchase appropriate text, audio visual, and supplemental materials for each subject matter area	7.4	90	370			
8.2.2	Identify and submit purchase requisitions for moveable furniture and equipment for entire facility	2.2; 7.4	45	260			

190

191

Activity Schedule Opening School Activities

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
8.2.3	Identify and submit purchase requisitions for specialized equipment necessary in each subject matter area	2.2; 7.4	30	180			
8.2.4	Identify and submit purchase requisitions for instructional supplies	7.4	15	45			
8.2.5	Identify and submit purchase requistions for library materials and audio-visual equipment	2.2; 7.4	30	100			
8.2.6	Receive, inventory, store, or set in place all texts, audio-visual material and equipment, instructional supplies, furniture, moveable tools and equipment, specialized equipment, and Media Center materials	8.2.1; 8.2.2; 8.2.3; 8.2.4; 8.2.5	90	340			
8.3	Scheduling						
8.3.1	Establish a master schedule, listing course offerings, rooms, labs, and hours		5	10			
8.3.2	Compile a list of students and their course preferences	10.3	10	20			
8.3.3	Compile a list of available teachers and their prime area of specialization or certification	10.2	30	310			

192

193

Activity Schedule Opening School Activities

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
8.3.4	Schedule each student on the master schedule and provide information to district computer center in order to get students' computerized schedule cards		20	20			
8.3.5	Schedule room/labs, and teachers to match projected enrollments in each area	8.3.1; 8.3.4	10	10			
8.3.6	Schedule satellite areas as appropriate	4.1; 8.3.1	10	40			
8.3.7	Work with District Transportation Office to schedule student transportation to and from the various school areas	8.3.1;8.3.6	15	50			
8.4	Inservice - Professional Staff						
8.4.1	Develop all necessary Inservice materials in order to make the time spent worth while and relevant	2.2; 8.1.9; 8.3.5	30	40			
8.4.2	Coordinate Inservice scheduling through Administration		2	20			
8.4.3	Hold Inservice during school year prior to opening for those teachers known to have been appointed to a Magnet School Staff	10.2	7	100			
8.4.4	Plan and participate in 3 day Staff In-service Retreat	10.2	5	20			

194

195

Activity Schedule Opening School Activities

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibility
8.4.5	Assist staff in developing short and long range goals for the Magnet School and the individual departments	10.2	5	30			
8.5	Inservice-Support Staff						
8.5.1	Develop Inservice materials necessary to acquaint Support Staff with the Philosophy, Program and Goals of the Magnet School	2.2; 8.1.9	30	40			
8.5.2	Coordinate Inservice scheduling through Support Services		2	20			
8.5.3	Plan and participate in 3 day Staff Inservice Retreat	10.2	5	20			
8.5.4	Assist Support Staff in developing short and long range goals for the Magnet School and their individual job functions		5	30			

Activity Schedule Facility Design and Construction

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibili
9.1	Design and Construction Coordination						
9.1.1	Interpret education programs and EdSpecs to design architects	5.2; 5.3.1; 5.4.1;5.4.5	10	50			
9.1.2	Review design responses	9.1.1	15	50			
9.1.3	Review final schematic as presented	9.1.2	5	20			
9.1.4	Develop design development documents with design architects	5.2; 5.4.5; 9.1.3	30	60			
9.1.5	Maintain regular contact with district construction supervisor regarding construction questions	5.4.5; 9.1.4	70	395			

198

199

Activity Schedule Recruit Students and Staff

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibilit
10.1	Development and Recruitment Materials	6.1; 4.1; 3.2					
10.1.1	Determine and list all possible professional positions needed for opening the Magnet School	2.2; 5.4;7.4	3	15			
10.1.2	Determine and list all possible paraprofessional positions needed for opening the Magnet School	2.2;5.4;6.0	3	15			
10.1.3	Write job descriptions for the Magnet School Professional staff	10.1.1	5	20			
10.1.4	Write job descriptions for the Magnet School Paraprofessional staff	10.1.2	5	20			
10.1.5	Correlate job vacancies and their descriptions with those of district personnel staff	10.1.3;10.1.4	2	250			
10.1.6	Determine awareness goals		2	15			
10.1.7	Determine basic guidelines for distinguishing between awareness and recruitment procedures	10.1.6	3	15			
10.1.8	Determine awareness procedure	10.1.7	5	15			
10.1.9	Determine awareness format and operational mode	10.1.7;10.1.8	2	15			
10.1.10	Write up awareness material	10.1.8;10.1.9	5	10			
10.1.11	Develop total awareness package for dispersal	10.1.10	2	10			
10.1.12	Determine recruitment goals	10.1.7	2	10			
10.1.13	Determine recruitment procedures, theme, and emphasis points	10.1.12	5	10			
10.1.14	Write up recruitment materials	10.1.13	5	10			
10.1.15	Develop total recruitment package for dispersal	10.1.14	5	250			

Activity Schedule Recruit Students and Staff

Level: IV

Network Number	Activity	Prerequisites	Days	Duration	Start Date	End Date	Responsibili
10.2	Staff Recruitment	6.1; 4.1; 5.4; 10.1					
10.2.1	Using job descriptions and working with District Personnel Deparment, develop a written procedure for advertising of job vacancies at the Magnet School	10.1.3; 10.1.4; 10.1.5	5	20			
10.2.2	Develop a priority list of staff selection	10.1.1; 10.1.2	2	10			
10.2.3	With liaison and approval of district personnel department, develop and write STANDARDIZED set of guidelines for interviewing potential staff	10.2.1	5	8			
10.2.4	With district personnel department, screen and interview applicants for Magnet School job vacancies	10.2.3		350			
10.2.5	Maintain close liaison and personal relations with schools of the district during staff recruitment period			350			
10.3	Student Recruitment	6.1; 4.1; 10.1					
10.3.1	Develop an information dispersal program for pre-recruitment period	10.1.6; 10.1.7	3	250			
10.3.2	Review and analyze recruitment goals and procedures	10.1.7; 10.3.1	5	20			
10.3.3	Learn, analyze and become familiar with district recruitment procedures						
10.3.4	Become part of the annual district recruitment program		10	10			
10.3.5	Conduct late registration and recruitment		7	20			

THE HISTORY OF MAGNET SCHOOLS

Introduction

The American public school system is a product of many different events and cultural aspects of our society. During the first hundred years of our country, children on the frontier and on farms often quit school to train in farming and other occupations. Apprenticeships for youth were an accepted educational form.

As the country became more industrial during the next fifty years, job training opportunities expanded. Many youths worked in industry with estimates indicating that in 1900 twice as many school age children worked as attended school.[1] Working was an acceptable alternative to formal education for the first one hundred and fifty years of this country. In some areas evening schools were set up to accomodate working children.

As more adult workers immigrated to America and labor unions developed, the child labor laws were extended and enforced. The opportunities for apprenticeships, job training, and work became limited for school age youth.

Less than ten percent of all young people completed high school at the beginning of this century. The public schools were designed to prepare that small group of graduates to go to college. Since not all students do well in an academic environment, it was expected that only a small percentage would succeed. Vocational schools and evening schools were set up, but as the age for compulsory school attendance was extended, more and more students were forced into the traditional classroom. By the 1950's, the majority of students were in the structured academic setting with no alternative available.

---

[1] Smith, Vernon H., et al. Optional Alternative Public Schools. Bloomington, Indiana: The Phi Delta Kappa Educational Foundation, 1974.

By 1950, those schools that only a few years before eliminated most students were now expected to provide secondary education to the masses.

The public is once again becoming aware that not all students learn in the same manner. As awareness grows, alternatives to our academic education are becoming more available.

Early Alternatives

Certain types of alternative schools have been in existence for many years, although the idea of using alternative schools to achieve educational excellence is relatively recent.

Vocational schools, a type of alternative school, have been around the public schools for years. The 1960's produced scores of "open" schools and "free" schools. These were largely outside the public sector of education, and many of them focused on the theories of public school critics of that period: A. S. Neill, Goodman, Kohl, Holt, Dennison, etc.

It was in the early 1970's that the public schools began moving in the direction of alternative education. This movement began with a resurgence of vocational and technical education. With the age of technology bearing down upon us and unemployment escalating, especially among the unskilled young, community concern began to surface as to the effectiveness of our public schools in preparing students to enter the work world. Through this concern, the public schools began to take notice of the different needs of students.

Following closely the establishment of the new vocational schools were the "open" schools for bright students who could not seem to function in the traditional school environment. "Alternative" schools sprang up within the public schools for students with special programs: disruptives,

drop outs, unwed mothers, etc. These schools came to be viewed as the dumping ground for the public schools. This view led people to believe that all alternative schools were for the non-academic problem student and not for the average student who belonged in a regular school.

The concept of school-without-walls was begun in response to declining performance of inner city children. The concept was to use the entire city and its resources as the school room. Many other alternative schools have surfaced during the first part of the 1970's. Schools that feature a specific teaching approach have been introduced. These include open schools, with informal classroom settings; fundamental schools, which stress teaching basics in a structured atmosphere; continuous progress schools, which are ungraded and allow students to progress at their own rate; and Montessori schools, a student centered approach to teaching. Alternative schools can also stress a specific subject area; science, art, business, law, etc.

Magnet Schools

The magnet school is a type of alternative school designed to draw its student body from an entire school district rather than from a specific attendance zone. These schools encompass many of the various approaches mentioned previously. They offer students voluntary options to the traditional education offered in neighborhood schools. They allow the school district to bring together students who share a common interest but come from different cultural, social, and economic backgrounds.

Perhaps the most important role of the magnet school is that it allows the school district to educate students in the ways that best suit their individual needs. The magnet school concept offers a bright hope for the quality of public education in years to come.

Dallas Independent School District

Vocational education has existed in the Dallas district since the district set up Dallas Technical High School in 1928. The school was designed to prepare students for careers in the trades upon graduation from high school.

In 1964 the district was approached by representatives of the Dallas Chamber of Commerce who voiced their concern about the need for high school graduates who had training that could be utilized by the Dallas business and industrial communities. The school district responded by developing the concept for the Skyline Career Development Center. It took approximately five years for the development of this concept that culminated with the center's opening during the 1970-71 school year.

The Career Development Center, while not originally called a magnet school, meets the definition of a magnet school. A magnet school in Dallas is "an educational program that is unique and different from programs offered in regular high schools and is available to all students throughout the district."

Since its opening in 1970, the Skyline Career Development Center has grown both in popularity and sophistication. This magnet school currently attracts 2,800 students on a voluntary basis.

When the current desegregation court order was handed down in April of 1976, it called for the development of magnet schools at the elementary, middle, and high school levels. The idea for this plan had come from a citizens advisory group that had been organized to develop a desegregation plan that would be acceptable to the community. The magnet school concept was considered one of the most important parts of the court order, and the school district had the responsibility not only to develop magnet schools, but to make them work.

297

As soon as the court order was received, the administration organized for the development of magnet schools at the three levels. A task force of administrators was set up and remained in effect until the fall of 1976 when an administrator was appointed to work with the final development and implementation of the magnet schools.

Parent and community advisory committees were set up to provide input, help design programs, and recruit students. In late May and early June administrators had been appointed and began work with advisory committees on program development and ordering of necessary supplies and materials. Renovation was begun on the sites selected. A massive public relations campaign was organized and in late May, students application blanks were distributed through the schools and the community. The district opened five vanguard schools, grades 4-6; three academies, grades 7-8; and four magnet high schools, grades 9-12, within the time set by the court order.

In compliance with the court order, the academies and vanguard schools were located in minority areas. The high school magnets were located within a two mile radius of the downtown business district.

The magnet schools were received with excellent acceptance. Approximately 6,000 applications were received and nearly 4,000 students enrolled when school opened in August.

After the first year, the district opened two more high school magnets and three additional academies. The Multiple Career Magnet Center, the seventh magnet, was opened during 1978-79. Other magnets that are being planned are the Lincoln Magnet for the Humanities and Communications skills and the Science and Technology Center.

An extensive recruiting program has been developed to sustain the

magnet schools. Career interest surveys are used in the high schools to assist the counselors. Vanguard and academy principals conduct recruiting campaigns by meeting with interested students and parents organizations to help those students and parents understand the programs offered. Each high school has a career counselor who helps students determine the program that fulfills their needs.

Philosophy of Alternative Schools

> "In recent years, we have increasingly come to realize that work and education are not opposing forces, and that an individual should not have to choose one or the other at a particular stage in his life. Rather, we recognize the fact that they are complementary processes, and that the emphasis placed on each will vary according to an individual's needs and his stage of life." (The Revolution in Technical Education, Frank Brown, Magnet Schools: Legal and Practical Implications; Estes, Nolan and Donald R. Waldrip, New Century Education Corp., New Jersey, 1978, p. 42.)

The move in education during the past few years has been towards the idea that all people do not learn best in one type of learning environment. Towards that end, magnet schools are being developed to offer students, parents, and educators a choice in the educational process. A wide variety of subject areas and educational styles are available in the public schools in many cities and towns.

For the student whose attention span is limited, flexible learning situations allow for frequent changes in activity and progress at a rate suitable to that individual. For the student with a greater than average interest in a specific subject area, the concept of total immersion has been developed. This is a program where the student spends several hour segments of the school day working in a certain subject area. This length time-period allows greater research and in depth work than could be accomplished in the ordinary fifty-five minute period.

For those students who want an extremely structured and highly academic background, fundamental schools were set up. Students who plan to move directly from high school into the job market may choose a

vocational school or a career directed school which allows them to experience various types of job activities. Many other alternative schools are in operation and undoubtedly new ones will develop to meet the challenges that face our society today and in the future.

Public attitude has changed towards alternative education over the past few years. Alternative schools are no longer viewed as the dumping ground for the public schools but as tools for a better education. Community involvement in the educational process appears to be the one major factor in this change in attitude.

Dallas Independent School District has seen a remarkable amount of support from the community for its magnet school program. Businesses, civic organizations, higher education, and religious organizations have all volunteered expertise and help to the schools. Why has this come about? Jim Keay, Chairman of the Board of Republic National Bank of Dallas, explained it this way.

> "Over the long haul, if we don't have a first class school system, we won't have people capable of dealing with a complicated society." (Building Tomorrow Today, DALLAS Magazine, Sept. 1978)

Programs such as the Adopt-A-School Project[1] and Reading is FUNdamental[2] encourage community participation while providing students with personal help and the materials necessary to acquire better skills. These programs can only be successful with the support and backing of the community.

Magnet schools are viewed by many as a step toward quality education for all students. The National Commission on the Reform of Secondary Education urges that "each district should provide a broad range of alternative schools and programs so that every student will have meaningful options available." (Vernon H. Smith, Magnet Schools: Legal and Practical Implications; Estes,

---

[1]Building Tomorrow Today, DALLAS Magazine, Sept. 1978

[2]Building Tomorrow Today, DALLAS Magazine, Sept. 1978

Nolan and Donald R. Waldrip. New Century Education Corp., New Jersey, 1978, p. 110.)

"My primary goal is quality education for our nation's young people; and, in that context, Magnet Schools constitute a very long stride on a very long avenue in the right direction." (Senator John Glenn, Magnet Schools: Legal and Practical Implications; Estes, Nolan and Donald R. Waldrip, New Century Education Corp., New Jersey, 1978, p. 34)

Magnet School Staff Selection

Selection of faculty and staff for any school is important, but it is of special concern for a magnet program. Implementation of an innovative concept requires people with an added degree of dedication, interest, enthusiasm, and specialized knowledge. These desirable traits should be sought whenever possible.

When district procedure permits, the magnet school director and administrative staff should be selected early in the planning process. Involvement of additional departmental persons with the building plan and curriculum writing in its initial phases is advantageous.

Following is a list of characteristics sought and the reason that each is important. The staff member should exhibit a high level of:

1. Dedication - which may be defined as the commitment to participate in a team effort toward achieving a common goal, although it may require more time and energy than that asked of conventional school staff.
2. Effective Teaming - is thought of as the ability to work well in a group where little or no individual recognition may be forthcoming outside of the immediate cluster.
3. Flexibility - where-in the ability to adapt to unforseen situations with a minimum of preparation or forewarning is exhibited. The teacher must be able to modify existing curriculum to meet the students' needs and be willing to pilot-test newly developed curriculum in a positive environment. In addition, the teacher is part of a team which must be able to provide objective evaluation

of the program for ongoing revisions and future implementations.

4. Knowledge in areas of specialization - that is, he or she must possess the ability to convey theoretical as well as applicable and practical knowledge in the subject. Added benefits could be derived from an instructor that had business or commercial experience in the area to be taught.

5. Enthusiasm and interest - is often evidenced by teachers who may have made the extra effort to seek out the job. These teachers have a higher rate of success and stability than those simply assigned to the school.

6. Experience - is valued because an experienced teacher is often familiar with the district curriculum, materials, and procedure and is preferred over one new to the system. Exceptions to the above, such as on-the-job experience which may be valuable in teaching students an employable skill, are: a craftsman sharing knowledge of his trade secured from years of experience with students; an artist explaining the intricacies involved in performing or creating; a scientist bringing practical laboratory experience to the classroom; or a businessman showing how to utilize planning and management skills to provide flexibility in daily operations. These examples illustrate the need for technically qualified people to be employed along with regular classroom teachers, especially if the magnet is to be career oriented.

Method of Staff Selection - The method of staff selection should be as universal as possible. District teachers should be informed of potential opportunities through newsletters, meetings, and local notices posted in schools. Business, professional, and trade persons should be secured through publicity and/or personal contacts.

An interview with each potential teacher should be conducted with magnet school administrators directly involved, because they are more aware of the immediate needs and will work closely with the staff selected. This will help to build a feeling of close affiliation and partnership necessary in this type of school.

The longer the time available prior to opening of the school the more effective the selection procedure can be. This will also allow sufficient preparation time for staff members. It is very important that everyone be ready and prepared for the opening of a magnet school and that teacher preparedness continue throughout the school year.

Staff Development - Staff Training - Staff development may be accomplished in two ways: (a) in-service or (b) on-site training.

In-service staff development may consist of sessions devoted to training by local facilitators, resource persons, or consultants brought in specially for these meetings. The subjects may vary from course curriculum to management planning. Groups may be large or small, localized for the magnet or shared sessions with district-wide personnel. In-service training may occur prior to the beginning of the academic year, during specially designated staff development days, or at the end of the school day. Success of such programs is usually dependent upon the speaker, the agenda, and the time spent in preparation. It should also be noted that many areas to be addressed by magnet teachers are of limited interest to the conventional teacher.

On-site training may take place at an establishment giving the teacher specialized technical training to take back to the classroom

or at an institute of higher learning where added academic preparation is provided. Many colleges in conjunction with governmental agencies or educational centers offer courses in specific areas geared toward alternative programs. Often these may be taken in the evening or during summer vacation for graduate credit.

It is interesting to note when sending staff to attend on-site training programs that there is success in numbers--a group of three or more will receive greater benefit than an individual representative. Though initially more costly, the results are longer lasting. One teacher specially trained and returning to implement a new program or to lead staff development may be ignored by the local staff. The impact of enthusiastic hard work may be diminished by uncooperative colleagues. Additionally, a person singled out for specialized training may be chosen for promotion out of the classroom where the newly acquired skills cannot be utilized.

When a group of three or more receives training at the same time, a camaraderie develops which provides the necessary local support when morale and attitude need a boost. Common problems may be discussed and solutions posed. There is a broader base from which information may be generated, and possibilities of groups of teachers leaving simultaneously are greatly reduced. The effect of training on small groups then is more beneficial in the long term, has a longer life expectancy, has a higher rate of success, will generate more feedback, and is based on a firmer and more utilitarian foundation.

Magnet School Curriculum Development

Curriculum must follow state and local guidelines. However, curriculum should also meet the needs and achievement levels of the student population. Therefore, a magnet school should have a curriculum that is meaningful, complete, and one that meets student needs and state requirements in the selected area of specialization.

Due to its creative nature, a magnet can modify existing curriculum and combine it with proper supplemental materials to provide accurate, up-to-date information and practical experience for the student which is not available elsewhere in the school district.

Sources of Curriculum: A Curriculum Development Library Index is available.[1] It describes programs available for grades K-12 in the United States and Canada. The index is designed to share material already produced and to aid curriculum developers so that they can add to, not duplicate, work already done.

The U.S. Government is a prolific publisher of specialized material. The Government Documents Index, available in most libraries, lists publications produced by the various agencies, addresses for mail inquiries, and applicable costs. Government document depositories contain many valuable publications which may be ready by the public. NASA and HEW have written curriculum giving student objectives, classroom procedure, student assignments, and suggested supplemental materials.

---

1. For additional information write: Curriculum Development Library Project; Fear, Pitman Publishers, Inc., 6 Davis Drive, Belmont, California 94002.

When developing the magnet school, the following concerns should be considered:

(a) Writing Curriculum - Many school districts do not choose to develop curriculum because of the cost and time factors involved. Many subject area teachers, especially those interested in a magnet school, are good potential curriculum writers. They bring with them first-hand classroom experience, a knowledge of the materials that are required and are available, an understanding of the students' needs and a desire to help formulate additional curriculum for newly developing courses. Teachers will also become more dedicated to something that they have helped to create.

(b) Scheduled Time for Curriculum Writing - the time required for curriculum writing may be found during summer recess, during staff development time set aside during the year, or by staff-released time allotted during the year by lessening the teaching load. This will allow practical teacher input as well as opportunity for informal and continual pilot testing.

(c) Consultants - Consultants from outside of the district should be brought in to review what has been done and to assist in the writing. The consultant can share knowledge acquired in previous contacts about projects that have been developed and implemented elsewhere and often can suggest additional resources unfamiliar to the staff.

(d) Curriculum Content - Wherever possible, basic curriculum for a magnet school should be revised to relate to the school's emphasis: For example, required history in the performing arts

magnet may emphasize the emergence of the arts, the role of artists during the various historical periods, the influence of the arts on the culture, the people, and the leaders of the time, the sequence of development, and the potential and future trends.

Curriculum should be structured to develop the student's perception and understanding of the area of specialization and to place it in proper perspective with regard to the historical, geographical, political, philosophical, technical and scientific development of mankind.

(e) Reading in the Content Area - Another facet of successful alternative curriculum is the incorporation of reading into the content areas. Every teacher in essence becomes a reading teacher. All classes, from the most basic to the most detailed, involve comprehension of reading material. Whether the material to be read consists of a primer type manual or a computer instruction handbook, time must be devoted to its understanding in class. Attention should be given to spelling (especially often used technical terms), to grammar (proper usage in all required written assignments), and to accuracy in computation. Skills learned in one course must be carried over and applied in other subject areas.

(f) Sources of Material - The list of sources available to curriculum writers and classroom teachers is extensive. In addition to periodicals, books, technical literature, commercial handouts, and government publications (see Sources of Curriculum), information may be secured from trade and technical schools, colleges, and universities, research institutes, publishers, and other similar schools.

In some instances, an outside group will assume responsibility for a particular course (or section of it). Commercial enterprises (from government owned utilities to international corporations) have opened their facilities, provided staff to teach, and supplied material to be used by the students. Becoming the partner of a local college or university is an asset in developing a new magnet program. In addition to the academic and technical expertise offered, the benefits of a positive public relations image are far-reaching in the formative stages of such a program.

To assure complete utilization of the most effective sources in your area, use the following checklist as a guide (the order is flexible):

1. Visit similar type schools in your area. (They do not have to have the same objectives as your school.) Arrange to spend time with administrators and teachers discussing the program, procedures, problems, and results.
2. Use local libraries for indexes and available information. Speak with the librarian for any additional suggestions.
3. Visit local business groups with a prepared summarized description of your program. (Individual handouts are suggested so that they may be left with interested individuals. They can be used as a refresher and a reminder at a future date.) Include in your presentation specific ways in which the organization(s) can assist and aid in your project.
4. Meet with department representatives of local junior colleges, colleges, universities, and research institutes. Discuss

their knowledge of existing similar projects as well as current research in the field. As with businessmen, prepare a description of your program and indicate specific requests.

5. Develop a mailing list. Include places to write for materials developed for curriculum and supplemental materials for reference and use the index to broaden your horizons by informing "authorities" of your intentions. A list of consultants may be derived from this correspondence when and if funds are allocated.
6. Equipment may be secured on loan or by donation from commercial establishments or institutions of higher learning.
7. Contact textbook publishers and/or publisher representatives. Publishers are aware of much new material being prepared for your level. If possible, ERIC search should be instituted to bring the literature up to date. In addition, the most valuable resources are the teachers, educators, and technicians currently involved in the specific areas. They have access to professional groups and organizations where a wealth of material is available.

TO: Mr. Jesse Harris

FROM: Janet Shafer

SUBJECT: Fernbank Science Center Visit

DATE: May 28, 1979

PROGRAM CONTACTS: Fernbank Science Center - Lewis Shelton, Director; Mary Hiers, Assistant Director; and David O. Funderburk, Instructional Co-ordinator.

SUMMARY: Fernbank Science Center is operated by the county school system of De Kalb County. It does not have a full time student body but offers enrichment courses in a wide variety of areas. It also offers programs and courses to the general public.

SPECIFICS

school development: 1) The Fernbank Science Center was developed in the post-Sputnik days when science instruction was very popular. The De Kalb county superintendent at that time was strongly in favor of the development of a science center. When finances became available, a grant proposal was written and subsequently funded. The grant provided money to build the main facility and equip it with major items (electron microscope, planitarium projector, telescope, etc.). The grant also provided salaries for the staff for the first three years. The site for the science center was selected primarily because of the sixty-five acre natural area for which the school district was caretaker. While the center was originally envisioned as strictly a nature center, the availability of federal funds allowed developers to expand its scope.

staff selection: 2) The initial staff for the center was recruited by the director from across the U.S.A. through the use of advertisements and recruiting visits. Very few people are hired for the center from the De Kalb County School District. The center's staff is made up of approximately an even number of teachers and Ph.D.'s trained as professional scientists. All teaching staff members are experts in some area and are highly knowledgeable in other areas. All can teach at any grade level. It is generally felt by the staff that the mixture of teaching professionals with professional scientists has been beneficial to the center.

inservice training: 3) There is no formal inservice training for the center's staff. Bi-weekly seminars at which staff members share their ongoing research are held. The members of the Fernbank staff conduct extensive inservice training for the districts' science teachers. The programs vary from two hour programs on technique to full semester non credit evening courses for the science teacher with little science background.

school philosophy: 4) The emphasis at Fernbank is on teaching rather than research. Staff members view the program as enrichment that will allow students to experience science related activities that would not be available in their home schools.

student program

5) The largest portion of the student program is done on an appointment basis. Classes come to the center for an hour or two of instruction on a specific topic. There are some ongoing research courses offered to students as independent science courses. These courses are offered on a quarterly basis. In addition to the regular student courses, the center offers courses to the public on a wide variety of science related topics.

computer use

6) Fernbanks computer programs are largely developed to fit the specific needs of the courses offered or to teach computer use. The computer is used more as a tool to aid instruction than as an actual instructional end within itself.

instructional programs

7) Fernbank offers several unusual instructional programs. One of these is the traveling program. In this program, the center's faculty spends one day a week going to schools in the district to instruct students on a predetermined topic. This program has been highly successful. Traveling exhibits and audiovisual programs are also used. Science kits and audiovisual packets are available on loan to teachers within the De Kalb County School District.

POSSIBLE APPLICATIONS

versatile staff

1) Nearly everyone at Fernbank is an expert in one field and is also highly competent in several others. The person interviewed felt that selecting a versatile staff was essential to any program of this sort.

traveling kits

2) The idea of traveling science education kits could be applied to Dallas schools. Such kits probably should be used to acquaint the inner city youth with science, nature, and technology in the North Texas area.

inservice training

3) The use of the center's staff for inservice training of other science teachers works well and teachers are generally eager to come to the center for this type of inservice training.

publications

4) Fernbank puts out several publications including a "Quarterly," which is research oriented, and several monthly elementary science newsletters for the schools use. Such publications might be used at STMS by having a quarterly published by the students on research they are doing. A course in journalism could be incorporated into the curriculum by using students to publish monthly science newsletters for specific grades designed for use in Dallas elementary schools.

information

The following publications were brought back from Fernbank: "School Programs 1977-1978," "Planetarium Programs 1978-79," "Fall Quarter Enrichment Programs," "Fernbank Forest," several single visitation program sheets, "Fernbank Quarterly," "Primarily for U.S.," and "Just for U.S." These are on file at the STMS offices.

TO: Mr. Jesse Harris

FROM: Janet Shafer

SUBJECT: Houston Visits

DATE: May 30, 1979

PROGRAM CONTACTS: Houston Independent School District - Marcile Hollingsworth, Director of Science

SUMMARY: The Wainright Science and Math Academy is operated by the Houston Independent School District for grades 4-6. The district is considering the addition of third grade students.

SPECIFICS

school development: 1) The Wainright Science and Math Academy was developed in response to a desegregation order.

staff selection: 2) Staff and faculty positions at Wainright were opened to qualified district teachers prior to recruitment from outside the district. The teachers and staff members I spoke with urged selection of a strong leader who is competent in the field of the school's emphasis. The faculty and staff at Wainright suggested that all administrative staff should continue to be involved in the classroom, if at all possible.

school philosophy: 3) The Houston schools have chosen not to try to advance students beyond the appropriate grade level in the elementary magnet schools. The emphasis is placed on giving students a wider variety of experiences, more exposure, and more skill development.

student selection: 4) At Wainright Science and Math Academy the student selection process is designed to bring in students who are interested in and motivated by the areas of science and math and students who show the potential for doing well in science and math. The screening process includes interviews and a procedure for determining potential in certain areas.

student program: 5) Students at Wainright begin classes at 7:30 a.m. An extra hour of science and math study is provided. Students select the topic to be taken during the extra class period. Each enrichment course runs three to four weeks. All students are grouped by topic or skill level rather than by grade.

problems: 6) Bert Roth, principal of Wainright, indicated the development of a serious problem which he termed "faculty burn out." The dedication of magnet schools faculty and the intensity of such a school tend to work faculty members to the point that they "burn out" and must be replaced. At Wainright, this phenomenon has been observed after the faculty member has been there for three to four years.

PROGRAM CONTACTS: High School for Engineering Professions - Susan Sclafani, Coordinator

SUMMARY: The High School for Engineering Professions is operated by the Houston Independent School District and is for grades 9-12. The Engineering school is in its fourth year of operation.

SPECIFICS

staff selection: 1) The faculty of the High School for Engineering Professions has a number of teachers that are trained engineers. The students need the help of someone with more than book learning in the field.

inservice training: 2) Inservice training was done for the magnet school faculty the first summer. This training stressed methods for dealing with the inner city child as well as school philosophy and techniques.

school philosophy: 3) The philosophy of the Engineering school is to prepare students for advanced academic work. The school is not trying to duplicate what the colleges teach.

student selection: 4) Students are selected for this school on the basis of potential for success. Students are administered a differential aptitude test. Those students who show a high aptitude for reasoning ability but have low skill levels may be admitted on probation. The school admits about forty students on probation each year. These students are required to attend a two week summer skills workshop.

student: 5) The High School for Engineering Professions has a standard academic program with additional emphasis in the science and math area. Students take general engineering without the requirement that they select a specific area of interest.

computer use: 6) Computers are used as an aid in science courses. The remedial curriculum is largely computerized and self paced.

instructional program: 7) Much of the curriculum for the High School for Engineering Professions has been developed by the faculty. In developing the curriculum, the planner for the school checked with the deans of several Engineering schools in Texas. Three areas were listed in which strong secondary training was needed. The first was mathematics, the second was science, including lab science and biological science, and the third was English, with stress placed on communication skills.

facility: 8) The High School for Engineering Professions is housed in an older building. The second story has been converted for the school's use. The facilities are not elaborate. For example, a converted closet is the darkroom, and a shop room is now the engineering lab.

results: This year three students from this school have received MIT scholarships. Many other schools have presented scholarships to the High School of

Engineering Professions students also. In addition, many awards were won during the year in Engineering contests.

POSSIBLE APPLICATIONS

teaching staff

1) Three or four week mini-courses could be utilized to allow the administrative staff to maintain some contact with classroom teaching without the scheduling problems that would accompany a semester long course.

skills workshop

2) The two week summer skills workshop has been most beneficial in the Houston schools. It has been used successfully to bring students with potential up to an acceptable performance level.

check requirements

3) The planners for the High School for Engineering Professions discovered the necessity for checking all local, state, and federal laws pertaining to work, age, and certification.

information

4) The following publications were brought back from Houston: "HSEP Handbook," parts of a modular English course, a modular math course and several articles about the High School fo Engineering Professions. These are on file at the STMS office.

TO: Mr. Jesse Harris

FROM: Janet Shafer JS

SUBJECT: Cincinnati Magnet School Visit

DATE: June 4, 1979

PROGRAM CONTACTS: Cincinnati Academy of Mathematics and Science - Diane Sackmyster, Science Director; Norman Bolds, Principal; Lloyd Watts, Coordinator, CAMAS.

SUMMARY: The Cincinnati Academy of Mathematics and Science is located within a comprehensive high school operated by the Cincinnati Public Schools. The CAMAS program draws students in grades 7-12 from the entire school district.

SPECIFICS

school development: 1) The CAMAS program was started after a study by the Kettering Foundation indicated a need for specialized science and math education in Cincinnati. Local business and industry confirmed this need. The program was begun at the seventh and eighth grade level and extended up one grade every year.

school funding: 2) The Cincinnati schools have had difficulty getting funding. The local educators explained that the public has refused to pass tax laws in an effort to halt school desegregation.

school philosophy: 3) The CAMAS program is designed to offer a rigorous technically oriented curriculum in math and science to interested students. The program is working to prepare minorities for careers in math and science.

student selection: 4) Students for CAMAS are selected solely on the basis of interest and parental support. Racial balance is a primary consideration when accepting students on a first come first-serve basis.

student program: 5) The program at CAMAS is designed to give students basic skills which will enable them to pursue additional education or move directly into the work force. Many of the non-science courses are taken in the comprehensive high school rather than the CAMAS program. This allows for more course variety.

computer use: 6) The CAMAS program does have computer terminals that are hooked into the school district's computer.

student recruiting: 7) A program has been started at CAMAS called the "Woodall Wizards." Two teams are selected, each composed of six students. These teams go to schools and community groups and perform their "science magic" show. This has proven to be an effective recruiting tool.

226

POSSIBLE APPLICATIONS

student aid

1) Several major Cincinnati companies have found an unusual way to support the CAMAS program. They have given large grants to a local University which uses the funds to hire engineering, math, and other students to act as aids for the CAMAS program.

science enrichment program

2) A modified version of the Woodall Wizards could be used as a science enrichment program for students at STMS. The program has become so popular in Cincinnati that the Wizards cannot accept all the invitations received.

information

3) A brochure on the Cincinnati Academy of Mathematics and Science is on file at the STMS office.

Review of trip to San Jose, California
June 5, 1978

Two schools were visited on this trip. The first was the Regional Vocational Center where I was hosted by Mr. Joe Gensiracusa, Principal, and Mr. Roderick Clendenen, Asst. Superintendent. Both men had visited Dallas within the past year and were more than happy to share their materials with us on a return basis. I also had the opportunity to visit and lunch with Mr. Rudy Gatti, Superintendent of the Santa Clara Unified School District and five (5) members of his Board of Education. The Santa Clara group was most interested in our magnet school concept and asked that I share some information with them concerning this program. After returning from California, two brochures from each vanguard, academy, magnet school, and career development center were forwarded to Mr. Getti for sharing with his people.

The San Jose Regional Vocational Center is an area vocational school serving six districts and thirty-three (33) high schools. The Regional Center consists of eight buildings housing fifty specialty occupations from twelve major career areas and is designed to handle a maximum of 2100 students. All students attending the center do so for half day, five days a week. We discussed such areas as determination of new course offerings, student scheduling, size and layout of each building, use and formulation of advisory groups, student entry/exit points, and graduate follow-up. This discussion was followed by a tour of each building with ample time given to visit with students and faculty. Pictures of many of the labs are available in the office.

The second campus visited was that of San Jose State University. I was particularly interested in their program entitled "Environmental

Studies and Solar Energy." Dr. D. W. Aitkin, Director of the Center for Solar Energy Applications and his staff were most helpful in compiling a folder of materials and papers prepared in their facility and dealing with alternate energy forms. There may be some input for our school program and/or building design.

Next, I visited with Mr. Thomas Leonard and the Aeronautical Technician/Engineering Program. We discussed some of the types of laboratory facilities and training necessary for "Quality Control Technician" as well as the overall types of programs available at San Jose State University.

One interesting sidelight to my visit was the fact that the San Jose USD does offer some satelliting in a program entitled "Regional Occupational Programs." Mr. Clendenen is the person responsible for this program. He felt that a number of good things had come from it, but he also expressed some doubts about the program. He indicated that several items (not specified) had been counter-productive and that management/scheduling is a problem. In all fairness to our concept of satelliting, I might add that the San Jose Concept was (somewhat) different. Their program was more akin to the Co-Op Programs in Dallas, in that a <u>senior</u> may be assigned a paid internship for one school year, and his only contact with the Regional Vocational Center is from a visiting teacher/supervisor.

William E. Rakestraw
Asst. Principal/Planner

Report of On-Site visits to Science High Schools in Newark, New Jersey and Bronx, New York.

NEWARK: The Science High School was begun as a "school within a school" in August of 1974 with seven (7) teachers and sixty (60) students. Its first graduating class of 23 members "commenced" on June 11, 1978. Presently located in the abandoned former chemistry building of Rutgers University, this school enrolled 437 for 1977-78 with a staff of 30. Students from all middle schools and junior high schools may apply for admission. Acceptance is based upon student math and reading scores on standardized tests plus grade records and teacher recommendations. The curriculum is academic, developed around a core that consists of 10 periods of laboratory science per week. All students take four (4) years of science and four (4) of math, but most courses are taught at three (3) academic levels (modified tracking). The school has no co-operative programs with local business or industry, no community organizational support, and scant help from the Newark Board of Education. The program at Science High School includes all usual academic high school subjects.

BRONX: The Bronx High School of Science, now concluding its 40th year of operation, is among the oldest of its kind in the United States. The school has a "well rounded" academic curriculum that emphasizes math and science. A student must have credit for five (5) years of science, four (4) years of math, English, and Social Studies, three (3) years of Foreign Language, and lesser amounts of art, music, health, mechanical drawing, and science lab technique in order to graduate. Additionally, the student must have a satisfactory score on three Regents' examinations: English, four (4) years, Comprehensive Social Studies and third year of study in math, science or Foreign Languages. More than 98% of Science High's graduates go to college, and a high percentage continues into graduate

or professional school. Bronx High School of Science has a current enrollment of about 3,300 students, grades 9-12, from all five boroughs New York City. Great stress is placed upon lab work at all grades, and in the 11th and 12th grade this often takes the form of individual research projects. The school consistently has a large number of winners in national math and science competitions. An entrance test is given each year to 8th grade students who are interested in the High School of Science. The top scoring students are then considered for admission, depending upon the individual school record and teacher recommendation. An affirmative action plan annually admits a small number of students who do not qualify through usual admission procedures but who show good motivation and are willing to attend summer school to improve learning skills prior to the beginning of their 9th grade year. This high school has no community group with which it relates. Several local colleges and hospitals permit individual students to do research in their superior facilities. Greatest support for the school comes from vigorous parents' and alumni groups.

TO: Mr. Jesse Harris

FROM: Joan Vogel

SUBJECT: Site Visitations: New York, NY
Newark, NJ
Atlanta, GA
St. Louis, MO
San Diego, CA

DATE: September 24 through October 18, 1979

TYPES OF PROGRAMS

The magnet school programs observed included a "school-within-a-school" concept, part-day program at a home school, part-day program at a designated center, and full-time magnet schools with student admission based both upon choice and/or by entrance examination.

The emphasis during the visitations was upon science, math, and technology oriented secondary schools though all levels from K-12 and areas ranging from bilingual education to that of the arts were observed.

LOCATIONS WITHIN CITY

Most schools were located in predominantly lower-income minority areas of their respective cities. Some were older specially designed facilities situated in neighborhoods that have markedly changed with time.

DEVELOPMENT

Many of the schools developed, directly and indirectly, as a result of desegregation court orders. None were mandated. All utilized the magnet school concept of drawing students with similar interests from across ethnic and neighborhood boundaries together toward specialized individualized educational excellence. In all instances, except the schools visited in New York, the planning and curriculum development orginated with concerned district personnel. Some schools evolved through parent and community concern for education as the ethnic school population and personnel of local districts changed.

STUDENT ENROLLMENT

With the except of the New York schools where students are accepted only on the basis of competitive examinations (with teacher recommendations), the other schools undertook an active wide-spread recruitment program aimed at parents and students to inform them about the new program. All schools began with a minimum number of students and a core of dedicated teachers. Students were permitted to return to their "neighborhood schools" at any time. All had a successful initial year and are now at maximum enrollment--mostly due to teacher excellence, innovative individual teaching methods, and word-of-mouth recommendation.

In most instances students have a common interest in the area of study. Most are at or above grade level though some are much below resulting in a wide range of student achievement.

Students attend from across the local district. In many cases students travel lengthy distances to participate in an outstanding specialized program.

ATTENDANCE AND DISCIPLINE

Records show that the attendance figures are much higher for students enrolled in magnet programs than in similar schools across the district. Average daily attendance figures were usually above 90%--some as high as 97%.

Discipline was appreciably lower than in other comparable schools. Principals and teachers alike emphasized that students selecting this program are very strongly motivated both by faculty and parents to achieve. The discipline problems that do occur usually result from a student selecting the program for the wrong reasons.

FACULTY

District faculty volunteered for assignments in the magnet school or were recruited by administrators. In most instances only those fully aware of the time consuming, challenging demands to be placed upon them requested a transfer. All were enthusiastic, dynamic innovators dedicated to education and concerned about their students as individuals. It is interesting to note that most had entered education after successfully pursuing their profession in the business community. This enthusiasm and concern for students is a major factor in the success of the program. For many students and parents it is the deciding factor in selection of the magnet school.

Whenever possible administrators have utilized the complimentary interests and skills of the faculty to benefit the students (i.e., a science teacher fluent in Russian taught an elective Russian language course--the only one in the district; a teacher interested in soccer developed an extra-curricular soccer team that became the city champions; an art instructor interested in science developed curriculum for those interested in scientific illustration, etc.). Educators also indicated that they appreciated the professional leeway and recognition of their efforts. This tends to strengthen the bond between teacher and administrator and increases the feeling of loyalty toward the school which markedly decreases the teacher turnover rate. Usually new teachers are needed not as replacements but to accommodate expanding enrollment. In most schools visited there was a cohesiveness (almost familial) not readily noted in other schools.

CURRICULUM

In general, basic courses are taught. Electives are usually in the fields of special interest. Most teaching methods follow a "hands-on" approach for the student (one where students do as much as possible on their own) with guidance and instruction from the teacher (but not in a modular format). All students

are taught the same basic curriculum. The pace for the individual student is based upon their achievement (whenever possible classes are grouped according to ability). Teachers felt that this was the most satisfactory method for presenting material. Enrichment, not necessarily acceleration, was the guide for gifted students. Individualized research is available during the junior and senior years for interested, qualified students under the direction of a member of the faculty or under the tutelage of a number of a cooperating institution of higher learning, a scientific institution, or the civic or business community.

There is little interdepartmental emphasis--all subjects are taught as separate entities (i.e., English, social studies, foreign language, art, music, etc., are not oriented toward the field of specialization). This makes the student aware of the foundation upon which interdependent learning in future years is based. Upon graduation students are adequately prepared to enter a college-level or technically-oriented program. In most instances the magnet school, staffed by highly qualified interested personnel, has afforded the student an opportunity for exposure to classes and subjects not readily available in a "neighborhood high school."

In all of the science oriented schools it is expected that five years of science will be scheduled during the four high school years; four to five years of math (including some computer instruction) will be undertaken in addition to the required courses in English, history, foreign language, art, music, athletics, etc.

Due to the experience and interest in the field much curriculum is prepared by the individual teacher to supplement the textbook. Constant revision and modification occur. Oftentimes assistance is available from the central administration and from departmental staff. All materials are prepared to reinforce the material previously taught during classroom instruction.

NEW YORK SCHOOLS

The three New York schools visited are unique in that they are old established schools of educational excellence upon which similar schools world-wide are modeled. Admission is based upon competitive entrance exams, open to all students living within the city. Selection is determined by scores and the number of applicants. Usually only those in the top 5-10% are accepted. The curriculum has changed little in the past 50 years, and yet the work accomplished and research completed has become increasingly sophisticated. All students are college-bound. The major characteristics of the schools include: low faculty turnover (stable faculty), high (over 90%) student attendance, almost non-existent discipline problems. Student interest is maintained on such a high level that class disruptions are virtually non-existent and the maximum time-on-task is used for instruction; class size varies from 20-25 (average

to large) and most important--a faculty that stands behind and nurtures its students, recognizing their strengths and weaknesses and using these as a basis for advising and guiding the students along paths that usually assure future success. The curriculum taught is not different from that of any other school, but the quality of instruction is far superior, and the variety of academic courses at one facility surpasses any other high school in the city, state, or nation.

CONCLUSIONS

It was very evident that there was a great deal of administrative support in the development of the magnet school programs. Much of it was due to the perserverance and determination of educators associated with the idea from its inception. District financial limitations, transportation, and site location problems were never more than surmountable obstacles. The people who developed the respective schools had the common traits of interest, enthusiasm, dynamicism, and the desire to succeed which was readily conveyed to parents, students, and the local community. Utilizing creativeness and flexibility, these educators attracted the initial students. The program's ultimate success was assured as the faculty strived for consistent educational excellence through continual improvements.

There are unique problems associated with these programs in addition to those related to public school management. The administrators, faculty, and staff members appeared willing to share them in the hopes they would help others through the important formative years. The educators met during the visitations were exceptionally knowledgeable and were more inclined to share materials and information than the average teacher or supervisor. This was a very unique professional attitude appreciated by the observer.

MAGNET SCHOOL PLANNING PROJECT

PROGRAM AND EDUCATIONAL SPECIFICATIONS
JANUARY, 1979

dallas independent school district
3700 Ross Avenue, Dallas, Texas 75204

236

BOARD OF EDUCATION

Bradford N. Lapsley, *President*

Jill Foster, *Vice-President*

Sarah Haskins

Kathlyn Gilliam

Robert Medrano

Harryette Ehrhardt

Gerald M. Stanglin

Robert L. Price

Jerry Bartos

EXECUTIVE TEAM

Linus Wright
General Superintendent

Larry Ascough
Associate Superintendent
Communications

Rogers L. Barton
Associate Superintendent
Accountability and Development

William H. Cotton
Associate Superintendent
Management

Yvonne Ewell
Associate Superintendent
East Oak Cliff Sub-District

Joe M. Pitts
Associate Superintendent
Learning Services

Robert Andrews
Assistant Superintendent
Business Services

George Reid
Assistant Superintendent
Secondary Learning

H. B. Bell
Deputy Associate Superintendent
Special Funds Acquisition and Monitoring

Juan Flores
Assistant Superintendent
Multicultural Education

John J. Santillo
Assistant Superintendent
Personnel Services

Robby Collins
Deputy Associate Superintendent
Communications Management

Otto Fridia
Assistant Superintendent
Elementary Learning

William Webster
Assistant Superintendent
Research, Evaluation and Information Systems

Edward L. Cowens
Deputy Associate Superintendent
Personnel Services

Leon Hayes
Assistant Superintendent
East Oak Cliff Sub-District

Weldon Wells
Assistant Superintendent
Support Services

Sandra Malone
Deputy Associate Superintendent
Community Relations

Carlton C. Moffett
Assistant Superintendent
Alternative Learning

Tim Beckett
Deputy Associate Superintendent
Support Services

Ruby Morris
Deputy Associate Superintendent
Student Services

Pablo Perez
Assistant Superintendent
Learning Services

Allen R. Sullivan
Deputy Associate Superintendent
Student Services

FOREWORD

This Science & Technology Magnet School planning document has been developed to communicate its educational program and resulting facility requirements. Community members, teachers, students, and administrators have assisted in the development of this program, with the goal of providing a quality science and technology component within the pluralistic and multicultural education for all DISD students in grades 9-12.

This document will acquaint the reader with the School's philosophy and the precepts that underlie its development, and with the proposed program of studies. It identifies the facility needs of the science and technology curriuculum clusters to be offered when the School opens in the fall of 1980, as well as providing for building flexibility to respond to program changes and revisions over the next decades.

CONTENTS

I. BACKGROUND. 1

II. PHILOSOPHY. 3

III. THE INSTRUCTIONAL PROGRAM 6

Program Emphases
Program Components
Program Clusters

IV. IMPLEMENTING THE INSTRUCTIONAL PROGRAM. 12

Individualized Instruction
Total Immersion
Satelliting
The Facility as a Tool of Instruction

V. DESIGN IMPLICATIONS 14

VI. SPACE RELATIONSHIPS 18

VII. SPACE ALLOCATIONS 24

APPENDICES

A. STMS Program 27

B. STMS Satelliting 31

C. STMS Facility as an Instructional Tool 34

D. Cluster Program Descriptions 36

BACKGROUND

I. BACKGROUND

The April 7, 1976 Desegregation Court Order stipulated that the District should establish seven magnet schools by September 1979. In good faith, the DISD School Board has established six such schools which focus on the following career preparation areas: Arts; Business and Management; Health Professions; Human Services, Law and Public Administration; and Transportation. The Multiple Careers Magnet was opened in the late fall of 1978 as number seven. The Board then extended its commitment to the court-ordered magnet school concept as a means to provide quality integrated education and included funds in the 1976 Bond Program for two additional magnets, including the Science & Technology Magnet and the Lincoln Magnet School.

From its inception, the Science & Technology Magnet School (STMS) has been envisioned as the District's and Nation's showplace for an alternative secondary magnet school with particular emphasis on training secondary students in scientific and technological occupations, especially those related to the production, utilization and conservation of energy and to conservation and restoration of the physical environment. It has also been perceived as a school whose curriculum and staff must be most responsive in adapting to new science knowledge and technological developments as well as to developing student and societal needs.

Planning for the Science & Technology Magnet School (STMS) has been an outgrowth of the Skyline Wide Educational Plan, a project sponsored by the U.S. Office of Education for planning schools of the future to serve the Dallas-Fort Worth Metroplex. The planning has also incorporated the conclusions of Dr. Frank Chase, distinguished educational philosopher, crucial to the development of successful magnet schools. Particular attention has been given to incorporating three of Dr. Chase's conclusions because of their unique application

potential to the disciplines of science and technology. The STMS curriculum is highly oriented toward "action-learning and the coordination of educative experiences in school and community," most uniquely through the satelliting concept as defined in the section on the STMS Instructional Program. The program also responds to the recommendation that "specific modes of instruction" characterize the curriculum in that individualization and the inductive methodology will provide a common instructional strand for all STMS disciplines. Finally, the program is planned toward career orientations that provide "opportunities for employment and further education," enhanced by the concepts of satelliting and total immersion discussed in the section of this document on the STMS Instructional Program.

Community members and DISD staff members have been involved in the planning of the STMS program and facility through planning committees representing the Metroplex science and technology professions, DISD science and technology teachers, and DISD building administrators. This assistance has been essential to the development of the curriculum and instructional methodology, as well as the specifications for the facility.

The facility for the STMS will accommodate approximately 750 students in grades 9-12, whose ages will range from 14 to 18 years and who will come from all areas of DISD. The facility will be located on a site of approximately 28 acres in the East Oak Cliff section of Dallas, immediately south of the Trinity River and east of R.L. Thornton Freeway (Interstate 35). The site is rectangular in shape and its boundaries are: Eighth Street on the South, Eads Street on the West, Sabine Street on the North, and Denley Drive on the East.

The STMS is expected to open in the fall of 1980 in its new facility. Following are descriptions of the proposed program and the educational specifications for the facility.

PHILOSOPHY

II. PHILOSOPHY

The Science & Technology Magnet School is an extension of all Dallas High Schools and, as such, subscribes to the philosophy of the Dallas Independent School District and the Dallas Board of Education.

This philosophy recognizes the worth of every child in the community and causes the District to strive responsibly to provide all young persons with learning opportunities that will assist them in discovering and utilizing their individual interests, aptitudes, and abilities. Current belief is that a part of this discovery should include preparation for a life of productive and satisfying work. Since the individual's societal identity is influenced by the work role, the District is committed to affording each student an opportunity to:

- develop a positive self image;
- develop an understanding of the socio-economic structure of our society;
- develop and expand occupational awareness;
- define and develop personal goals through a continuing process of decision-making and the integration of knowledge of self and career opportunities;
- develop positive attitudes toward work, the dignity of persons in work, and the society in which people live;
- develop an understanding of the value of education relative to meeting the responsibilities of personal goals; and
- acquire marketable skills as preparation for becoming a productive member of society.

The Science & Technology Magnet School is challenged to prepare each student for the next step in life in accordance with the individual's science-related career goals, projections, and plans. It is further committed to helping each student learn moral responsibility and develop acceptable ethics in order to become an enlightened citizen in a democratic society. In supporting this philosophy, the administration and faculty of the Science & Technology Magnet

School will accept all students as they are and will endeavor to to give direction and purpose to the individuals' development. The following objectives in science and technology are derived from this philosophy:

- to furnish students with career education skills and/or college preparation opportunities;
- to provide a diversity of learning options which will assure the availability of equal educational opportunities for all;
- to provide opportunities for exploration and/or intensive preparation in an occupational cluster or a scientific area in preparation for job-entry or further education;
- to relate academic studies to the chosen curriculum and the world of work;
- to provide guidance and counseling to assist the students in career planning, course alternatives, post-secondary occupational programs, and/or college program availability;
- to help the students develop an understanding of ecology through exploration and/or intensive preparation in any of several occupational areas dealing with ecology and environmental studies;
- to develop an awareness of, and the need for, conservation of the natural resources through exploration and/or intensive preparation in any of several occupational areas dealing with conservation;
- to provide opportunities for the students to examine the needs for various types and uses of energy and to participate in programs designed to utilize new technology in providing sources for the energy people need;
- to develop competent student decision-making processes through curriculum approaches which provide opportunity for analyzing, organizing, and synthesizing information in order to make rational decisions;
- to design and implement instructional programs which provide for flexible program entry and exit;
- to offer a comprehensive program that supports and complements the science and technology curriculum;
- to determine the best possible configuration of management, instructional staff, and support services which will allow the Science and Technology Magnet to function as a catalyst for positive change;
- to provide placement opportunities for students at graduation

THE INSTRUCTIONAL PROGRAM

in a job, in a post-secondary occupational program, or in a college program; and

- to maintain follow-up studies of graduates and dropouts in order to evaluate and upgrade the programs.

III. INSTRUCTIONAL PROGRAM

Program Emphases In this age of rapidly escalating technological advances, it has become extremely important that a knowledgeable, well-trained work force be available. The STMS program will provide intensive training in the sciences and related technologies, emphasizing the environment, conservation, and energy. The courses of study are designed to provide each student with a strong theoretical background reinforced with related world-of-work experiences. Provisions will be made to meet graduation requirements. Students will be able to pursue preparations in science and technology that may lead to direct entry into their chosen work, further career preparation at a trade school or community college, or continued career study at the university level. For a more detailed discussion of the Program, refer to Appendix A.

Program Components All parts of the program of this unique school will share some features. Science and technology, particularly as they address problems related to conservation, energy, and environment, will provide the unifying theme to which all subject and discipline areas will relate. Flexibility in program design will allow individual, small group, and whole class instruction achievement of selected objectives suitable to each student's goals and aspirations.

Science and Technology The Science & Technology Magnet School will emphasize the training of young people for science/technology careers in the areas of energy, conservation, and environment. The concepts of science will be intertwined with the practical aspects of technology in order to provide the student with adequate preparation for the pursuit of his/her choice of career level. Each Science & Technology cluster will be composed of several parts which will introduce the student to the knowledge and study tools necessary for making a viable career choice at the desired level.

Library/Media Center In its ability to provide the tools of learning and research, the Library and Media Center will occupy a prominent position in the school. Its facilities should permit extensive individual work and should provide an opportunity

for students to experience data retrieval from the widest possible variety of sources. It will serve as a teaching tool as students learn how to find information that they need. Special areas will be needed for the use of film and video-tape, computer terminals, and other data retrieval equipment. Students in all subject areas will use the center for class related work. It is not anticipated at this time that any substantial amount of recreational reading material will be included in the collection.

Mathematics/Computer Applications The program of studies will include courses needed to meet graduation and college entrance requirements as well as those that relate specifically to science and technology. Students will use computer applications as tools to solve problems and may pursue such math-related topics as statistics and topology. The organization of materials in an orderly fashion to facilitate solution and the use of accurate measurement and computational skills will be stressed.

Language Arts (Communications) Graduation and college entrance requirements in literature/reading, mechanics of writing and speech, oral and written composition, will be taught as both tools (or means of learning) and as ends in and of themselves. Special emphasis will be placed on analytical reading skills as they apply to science and technology and on writing that is precise and clear. The ability to express ideas through written and oral communication will be stressed. A wide variety of speaking and journalistic writing opportunities will be provided.

Modern Languages (Communications) Language studies needed for college admission will be provided, as will advanced classes in technical and scientific reading. French, German, and Russian may be offered as demand justifies.

Social Studies A social studies curriculum to meet graduation

and college entry requirements will be offered in a form modified to reflect the special emphases of this school. History taught from the perspective of changes and progress brought about by science and technology will provide a foundation for futuristic thinking, and this study, along with similarly taught government and economics courses, will enable students to evaluate more intelligently current issues related to the sciences.

Health Education Two quarters of health education required for high school graduation will be offered. The purpose of this course is to provide the student with life skills and awareness in the areas of individual and community health problems, disease prevention, safety, nutrition, and human interaction. A wide variety of activities will be included in strategies for implementing these courses.

Visual Arts (Creative Arts) No separate visual arts program is contemplated for this school at this time. Arts and craft skills as they are needed may be provided at other DISD locations (Skyline, Arts Magnet) on a satellited basis.

Music (Creative Arts) No band, marching band, or full orchestra is planned for this school. Choral music, string ensemble, or some similar small group musical activity might be developed and taught on an avocational or personal fulfillment basis.

Drama (Creative Arts) No drama as a subject entity is planned. As an instructional tool, drama may be a part of the communications or the social studies curriculum.

Homemaking Courses in homemaking will not be offered, but instruction will be provided in "life skills." Those related technologies, such as safety design, building materials analysis, and consumer technology, will be taught in appropriate clusters.

Industrial Arts Usual courses in industrial arts will not be

offered. Those portions of the content of such courses that are needed by and supportive of technology courses will be incorporated into the appropriate field of study.

Business Education Typing courses that support the study of science and technology will be provided. No other courses are planned in this area.

Recreative Arts A limited program of physical education will be offered to meet requirements for graduation. No competitive athletics are to be included in the program. The students' needs for healthful and stimulating exercise will be met by use of a well-equipped gymnasium within the building, by outdoor activities directly related to the study of nature, conservation, and the environment, and through intramural activities.

Adaptive Education Most phases of the Science & Technology Magnet School program will be open to students who have physical handicaps, and the facility will be designed as required by law to accommodate these students, who would come to the school with their teacher for short periods of total immersion in science and technological experiences.

Guidance The guidance services are intended to help the adolescent student accept and establish realistic personal goals, develop positive self-concepts, and develop mutually satisfying interpersonal relations. Guidance services may include career counseling, individual counseling, group guidance and orientation, consultation and conferences, and liaison and follow-up, along with computer counseling capabilities.

Program Clusters

Science & Technology Clusters

Alternate Energy Technology

- Power Transmission Technology
- Alternative Sources I (Nuclear, Geothermal, Hydro)
- Alternative Sources II (Fossil, Solar, Wind)

Pre-Engineering

- Pre-Professional - General
- Pre-Professional - Alternate Energy
- Pre-Professional - Electronics/Laser Optics
- Pre-Professional - Environmental

Electronic Technology

- Industrial Electronics
- Laser-Optics Technology
- Electro-Mechanical

Environmental Technology

- Water Management
- Conservation
- Living Systems
- Fire & Fire Safety

Pre-Professional Science

- Advanced Science
- Technical and Applied Science

Pre-Professional Mathematics

- Advanced Mathematics
- Technical and Applied Mathematics

Scientific Data Processing (Computer Technology)

- Data Processing
- Programming

Academic and Related Clusters

Communications

Social Studies

Typing

Health

Physical Education

IMPLEMENTING THE PROGRAM

IV. IMPLEMENTING THE PROGRAM

The Science & Technology Magnet program will be implemented in a manner consistent with the subject areas and its future orientation. The inductive, or problem solving, method will be a primary instructional methodology for both the science and technology elements of the curriculum. Excellence will be emphasized at all levels of instruction and will be facilitated by means of the following organizational instructional techniques.

Individualized Instruction Individualized instruction, as it is conceived in the STMS, is a teaching strategy that allows self-paced mastery of content material and is directed at the development of each student's thought processes and content area knowledge. This strategy allows each student to learn at his/her optimum rate without regard for the readiness of others, as well as allowing greater teacher flexibility in the amount of help given or time spent with each student. It is also characterized by active student involvement in the learning process and encourages continuous self-evaluation by the student. Finally, it will also encourage each student to achieve mastery by providing materials, techniques, and alternatives based on the individual's needs, interests, and level of understanding.

It is an instructional strategy that enables each student to:

identify with his/her groups,
progress at his/her own rate,
work at his/her own level,
enjoy varying learning partnerships,
find alternatives,
pursue special interests,
find and use his/her talents,
share via his/her talents,
work alone when appropriate,
utilize appropriate resources,
help plan his/her own tasks, and
help evaluate his/her own progress.

Total Immersion The total immersion concept allows a student to be assigned to a content area for concentrated, full day, study extending over a specific time period. Such subject matter

concentration might allow the student four to five hours per day of uninterrupted study, thereby allowing in-depth study time for extended research projects, or other similar activities not possible in the normal, one period per day class organization. One quarter's work could be completed in as little as three weeks using this organizational plan. At the conclusion of each immersion period the student would focus on another area supportive of his/her career goals.

Satelliting In developing a program to meet the needs of the later 20th century and to anticipate the needs of the 21st, innovative techniques may be used to augment and complement conventional educational strategies. One such innovative approach is a concept that has been designated by the STMS planning group as "Satelliting." In this approach, students will be assigned to learning areas or stations (located in STMS building, in District schools, or in selected business, industrial, or academic locations outside DISD facilities) according to their individual program requirements. The use of internal and external satellites will be further enhanced through the use of "total immersion" instruction. For a more detailed discussion of Satelliting, refer to Appendix B.

Facility as a Tool of Instruction The STMS facility will be designed so it both supports and actively contributes to the instructional processes in unique ways. While serving as a student-centered laboratory, the building will illustrate the current state of technology in the conservation and utilization of resources in cost effective applications. For example, the building's daily resources consumption may be instrumented and controlled to serve as a working laboratory for all students, and for those receiving technical training in this area as part of their individual program. The building will also provide facilities for the testing of various materials and designs for their conservation qualities, with some such "test" situations designed into the working components of the building and the site. For a more detailed discussion of the Facility as a Tool of Instruction, refer to Appendix C.

DESIGN IMPLICATIONS

V. DESIGN IMPLICATIONS

The purpose of the Science & Technology Magnet School building is to facilitate the educational program of the Dallas Independent School District, both as it is currently conceived and as it may develop during the useful life of this facility. It is also incumbent that public funds be invested wisely in such capital improvements. The following concepts are presented as guides to the planning and design process toward these ends.

Adaptability and Flexibility The desired adaptability and flexibility are represented in the following concepts:

Flexible and Expansible Design The facility design will have internal configuration flexibility and allow for facility expansion. The facility should have non-load bearing walls and structural spans that support internal configuration flexibility.

Lifetime Multiple Use The facility should be designed to be adaptable to other educational and non-educational uses in its projected lifetime. The design should allow these conversions, particularly to other educational uses, to be made readily and inexpensively.

Modular Design As feasible, the design flexibility should be accomplished through a modular design, ideally on increments of four feet or multiples of four feet. The modular design should include the mechanical system, the services, and the interior partitioning.

Flexible, Relocatable, and Expansible Services The services that will be available to the respective teaching stations are a particularly important element of the facility's design. The facility must have the potential of bringing the basic

services to all academic, science, and technical teaching stations and adding new services to those areas. The first-use services must have the potential for economic expansion and relocation by School District personnel.

Versatile, Multi-function Spaces Consideration will be given to designing areas within the facility for multiple functions, including such spaces as student dining, student commons, and general purpose shop.

Space Configuration Planning and Depictions The first-use design will depict the facility in two renderings, depicting the design's flexibility to have both open space and self-contained teaching stations.

Economy in Design The desired economy in design is represented in the following concepts:

Compactness The facility will be designed compactly to provide the greatest possible amount of useable instructional space.

Life Cycle Cost Analysis Life cycle cost analyses should be computed for alternative building components under consideration, particularly for the mechanical system, the interior partitioning system, the services delivery system, and the energy conservation components.

Materials and Natural Resources Conservation The most current and economically feasible conservation technology will be incorporated into the facility's design, in both construction materials and design and with respect to the facility's operation costs.

Adaptable to Alternate Energy Sources The facility should

not only be designed to incorporate cost effective alternate energy applications, it should also be designed so that future conversions to such applications may be made easily and inexpensively.

The Facility as a Tool of Instruction The facility should be designed so that components that are related to energy utilization and conservation can serve as media for instruction within the Science & Technology Magnet School. This topic is dealt with in another section of this document in more detail in order to stress the importance given this concept in designing the STMS facility.

Ecological Considerations Because of the unique emphases of the STMS Program, special consideration must be given to the ecological features of the site and the location of the facility on the site. As such, certain areas of the site should retain all possible natural vegetation for use in controlled environmental studies. To the extent possible, native trees should be preserved. The facility should be located to afford immediate access to environmental test plots and easy access to controlled environmental areas. Landscape design should be aesthetically appealing as well as providing the students with an additional source for scientific exploration and observation. Proper drainage, good topsoil, and grass should be included on all fields. The architect and the STMS Planning Staff should confer regarding areas to be preserved and the appropriate development of those areas (footpaths, signs, testplots, security).

Environmental Control The facility will be planned with environmental control over the thermal, visual, and acoustic environments, and will make the control of these environments compatible with the conservation of materials and resources.

Property Protection Facility security and protection should be given a design priority as represented in the following statements:

Fire and Disaster Alarms A fire and disaster alarm system should be provided that meets state and local requirements and provides positive warning to every inside and outside space.

Intrusion Alarms An intrusion alarm system will be provided that meets local requirements for adequate building security.

Vandal Resistive Design The facility will be planned to be as vandal resistive as possible, giving special attention to roof access, entrances, physical activity areas, graffitti, and building surfaces.

Isolation and Fencing Night use areas and those to be used by the community should be isolated from the remainder of the building by gates or other devices providing secure isolation. Fencing of the site should be used only to the extent necessary for the protection of the students and their property and the security of school property, and then only when other more aesthetic architectural solutions cannot be developed. Specific areas which may need fencing include those designated for bus parking, student parking, certain physical activity areas such as tennis courts, and areas requiring strict control of the environment for instructional purposes.

Safety Features Safety for the facility's users should be given particular consideration because of the science and technology orientation of the program. The design solution should consider fire resistivity and ease of evacuation, as well as incorporate safety features associated with laboratory areas, including smoke and heat alarms, ABC extinguishers and fire blankets, safety showers, eye-wash stations, and building sprinkler system.

VI. SPACE RELATIONSHIPS

The space relationships diagrams are intended to define visually the internal relationships of the various functions and program components. The shapes (circles and ovals) and size of the various shapes hold no significance, except to represent a space need for a subject area or function so that internal space relationships can be defined.

The following diagrams present two levels of space relationships, those space relationships deemed essential and those identified as desirable. The diagrams contain the following information:

- Diagram A, the general relationships of the building's major areas and the building areas to the site;
- Diagram B, the essential relationships within the science and technology laboratories;
- Diagram C, the desired laboratory relationships in three groupings;
- Diagram D, the essential academic and ancillary space relationships; and
- Diagram E, the desired academic and ancillary space relationships.

Space Relationships Diagram Key

Overlapping Shapes	Spaces identified by overlapping shapes should have immediate access to each other.
Adjacent Shapes	Spaces identified by adjacent shapes should be in the same general area of the building.
Traffic Arrows	Spaces with arrows flowing to or through them should have the appropriate access.

DIAGRAM A

GENERAL SPACE RELATIONSHIPS

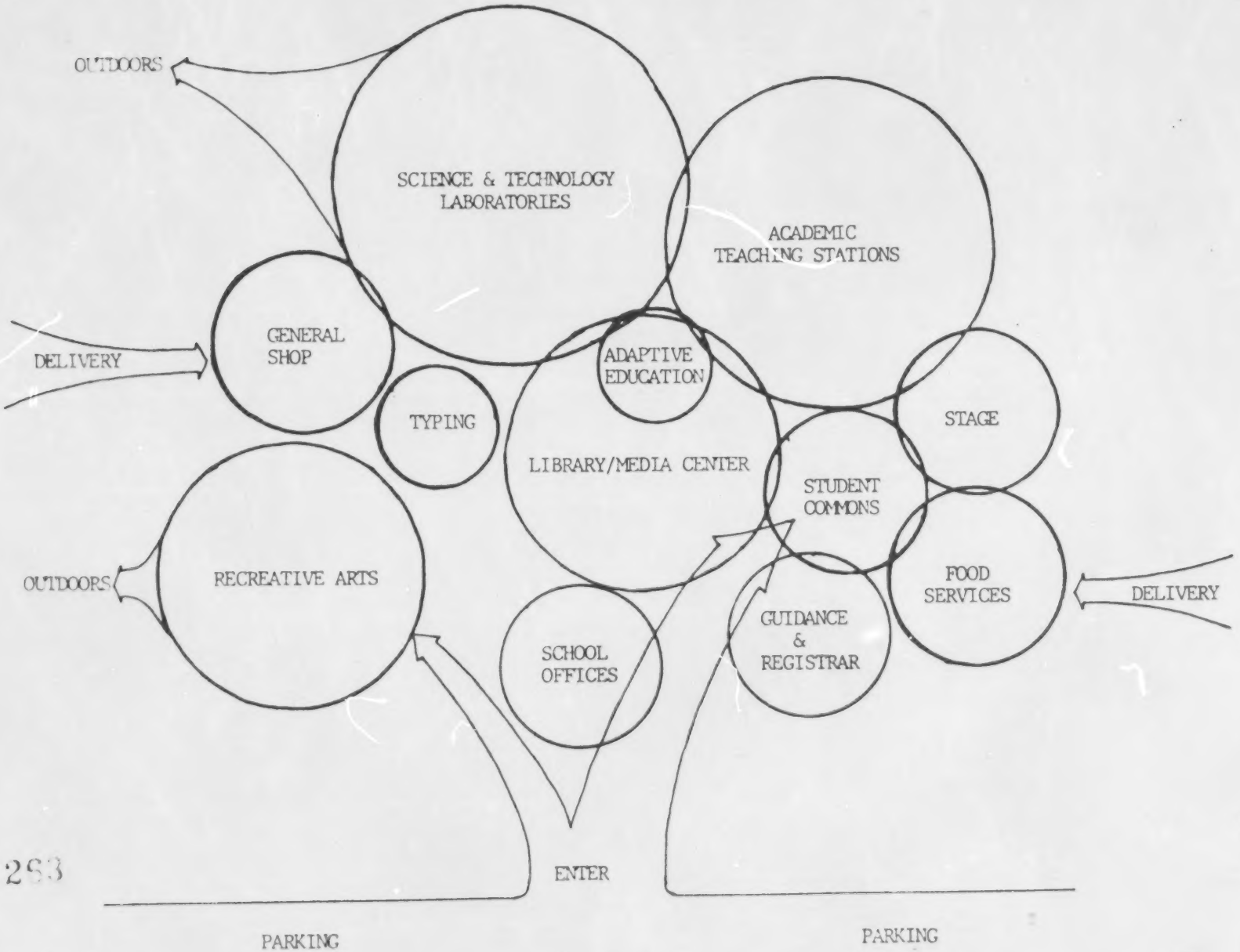
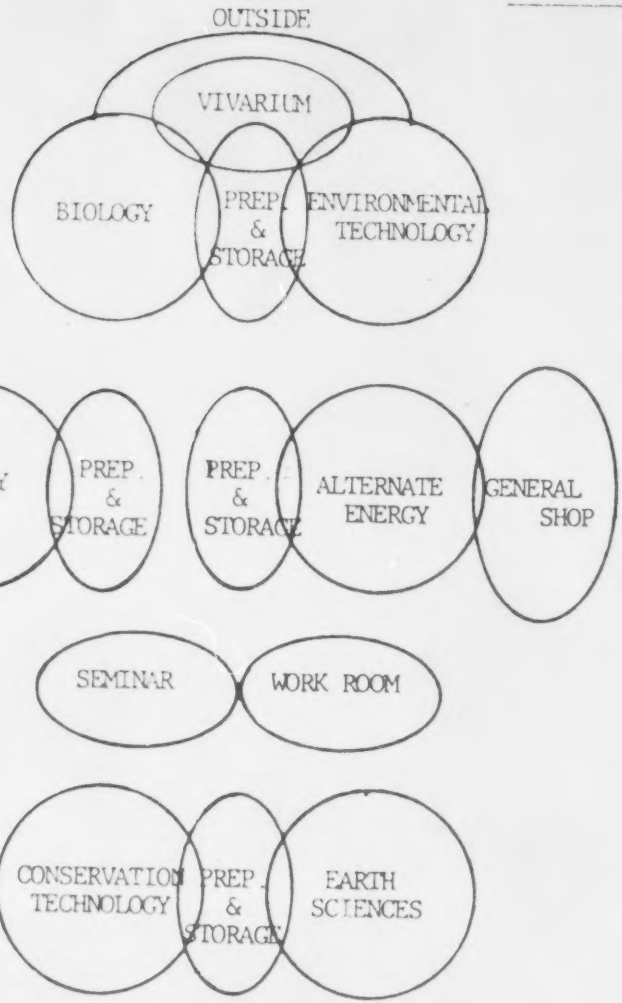


DIAGRAM B

ESSENTIAL SCIENCE LABORATORY RELATIONSHIPS



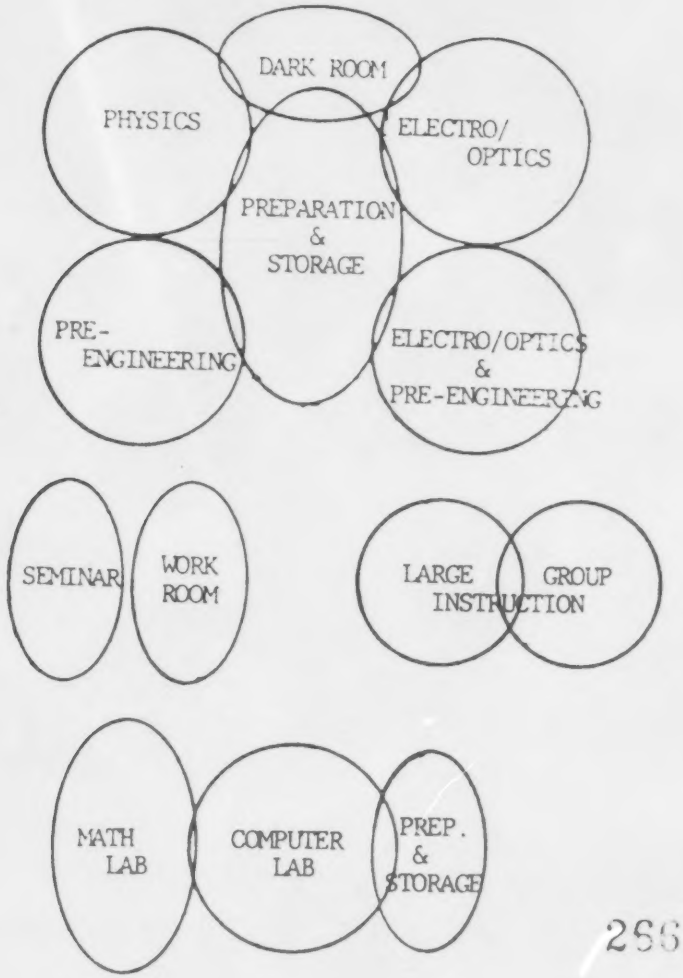
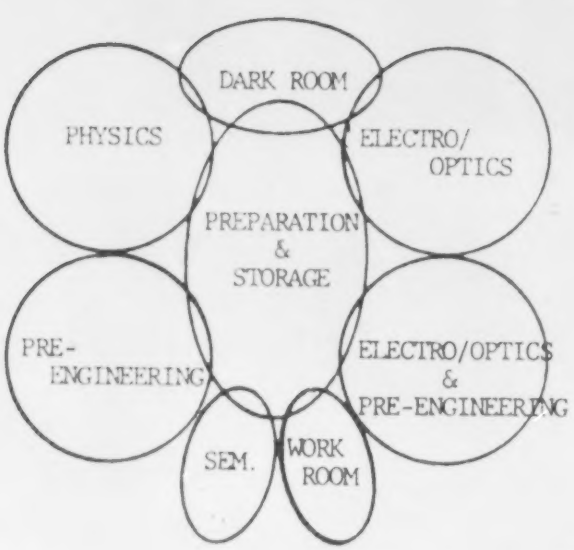
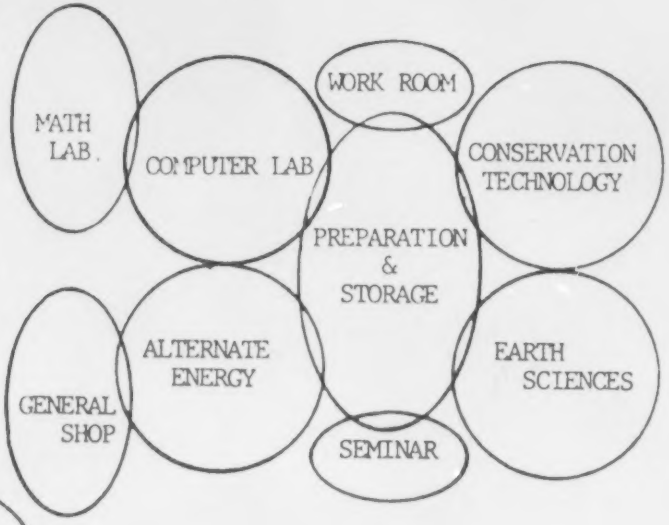


DIAGRAM C

SCIENCE LABORATORY RELATIONSHIPS FOR THREE GROUPINGS





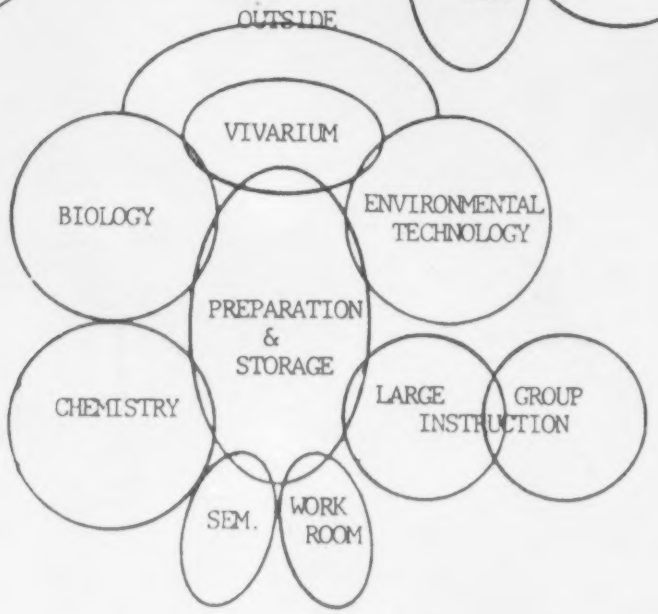
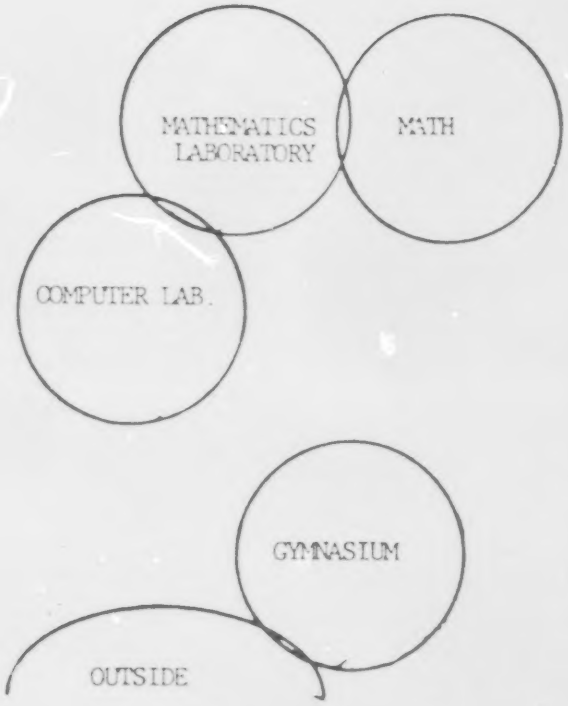


DIAGRAM D

ESSENTIAL ACADEMIC AND ANCILLARY SPACE RELATIONSHIPS



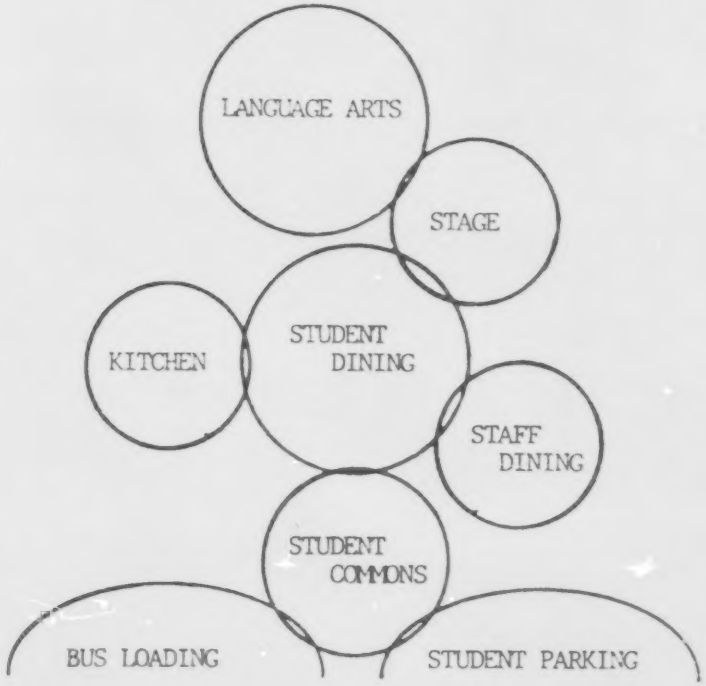
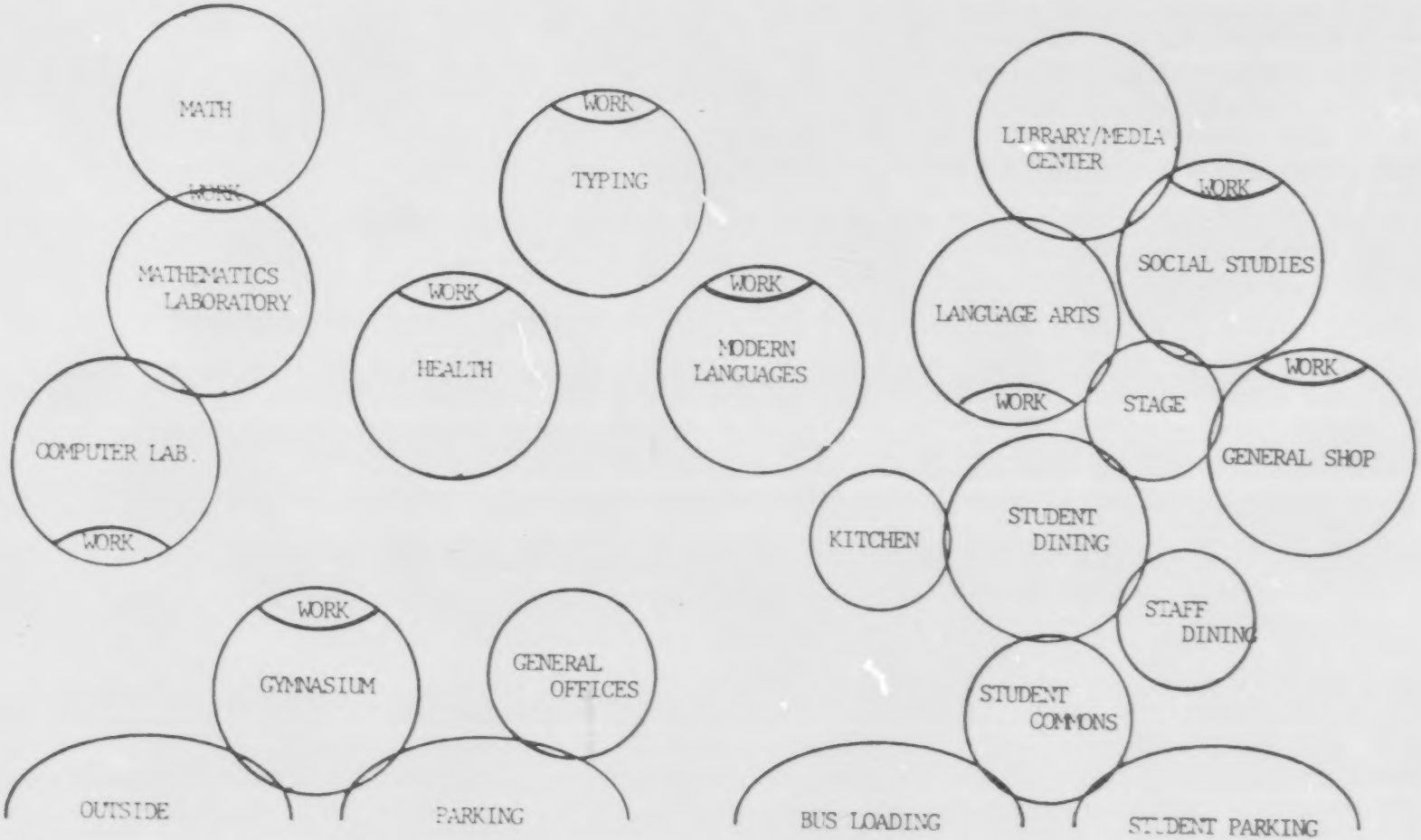


DIAGRAM E

DESIRABLE ACADEMIC AND ANCILLARY SPACE RELATIONSHIPS



VII. SPACE ALLOCATIONS

The space allocations listing contains space requirement guides, expressed in square feet, for both the number and size of the areas within the building.

Science & Technology Labs			19,500
lab teaching stations (11)		1,200 ea.	
prep. & storage areas		3,300	
seminar rooms (2)		300 ea.	
vivarium		850	
dark room		350	
student project areas (6)		200 ea.	
Library/Media Center			7,225
student work areas		3,000	
study carrels	600		
informal reading	300		
reading area	1,500		
seminar rooms (2)	200 ea.		
viewing/recording room	200		
Library staff & work areas		1,025	
Librarian's office	125		
processing & AV storage	600		
professional library	300		
stacks & circulation		1,900	
stacks (15,000 vol.)	1,000		
periodical stacks	200		
AV stacks	150		
reference area	300		
circulation & card cat.	250		
materials preparation area		600	
dark room	100		
preparation area	200		
storage	150		
electronic recording & distribution	150		
I.T.V. studio		700	
Academic Teaching Stations			12,300
teaching stations (13)		700 ea.	
student projects areas (2)		150 ea.	
seminar rooms (2)		300 ea.	
math laboratory		900	
large group instruction (2 divisible teaching stations)		1,400	
Business Education			1,000
typing teaching station		1,000	
Industrial Arts			4,450
general shop		2,500	
engineering graphics (drafting)		700	
finish room		300	
general storage		750	
student projects storage		200	

Recreative Arts			8,000
2 teaching station gym	4,000		
men's dressing	1,600		
women's dressing	1,600		
storage (2)	400	ea.	
Adaptive Education			450
adaptive education office/resource room	450		
Central Administration			2,200
general office area	600		
records vault	150		
work & machine area (P.A. system)	150		
conference	400		
director's office	250		
principal's office	250		
assistant principal's office	200		
dean of instruction office	200		
Guidance Center			1,145
counselor's offices (3)	125	ea.	
conference area	200		
record & storage (combine with registrar)	100		
reception/work	350		
interview/testing (2)	60	ea.	
Registrar's Office			750
registrar's office	100		
records & storage (combine with guidance)	300		
reception/work	350		
Health Services			750
waiting area	100		
examining area	200		
isolation areas (2)	100	ea.	
nurse's office	150		
restrooms	100		
Food Services			4,400
kitchen and serving	1,800		
storage	400		
dining	2,000		
kitchen staff	200		
Staff Work, Dining & Lounge			3,900
staff work areas (50 @ 50 ea.)	2,500		
staff dining	400		
non-smoking lounge	600		
smoking lounge	400		
Student Commons			2,950
student offices (3 govt., annual, paper)	150	ea.	
student store	400		
student lockers (1,100 students)	-0-		
commons	1,100		
stage (open to student dining)	1,000		

Central Storage		1,800
instructional materials & texts	800	
furniture & equipment	400	
custodial supplies	200	
custodial work shop	250	
outdoor equipment	150	
Subtotal		70,720
Corridors, stairways, restrooms, wall thicknesses, mechanical rooms, custodial facilities, and additional storage		35,760
TOTAL BUILDING AREA		106,580

APPENDICES

SCIENCE & TECHNOLOGY MAGNET SCHOOL

THE PROGRAM

In an age of rapidly escalating technological advances, it becomes extremely important that a knowledgeable, well-trained work force be available. The Dallas Independent School District, at the forefront for meeting the demands of current and future societies, is committed to training students for societal needs. The program emphases will encompass the emerging energy age by focusing on the science and related technologies devoted to energy, environment, and conservation, while providing the general academic requirements needed for graduation.

The courses of study are designed to provide the student with a strong, knowledge base and with those skills needed for self actualization--morally, ethically, and economically. They are structured to utilize the most efficient delivery system available. The student will be equipped with a strong theoretical background which will be reinforced by participation in the world of work.

Utilizing the "satelliting" concept, the program offerings will allow flexibility of student entry and exit. A student can explore an area of interest in accordance with individual goals, from preparation at the technical job entry level to the completion of pre-professional requirements for admission to college or professional schools.

The learning environment will enhance the "total immersion" instruction concept, both in the classroom and in job related experiences. The facility will incorporate the utilization of alternate energy sources, simulation areas, controlled environmental areas, recycling features, and conservation measures.

Environmental Education The Environmental Sciences constitute a broad-based area that will be one of the prime program offerings at the Science & Technology Magnet School. The diversity of the courses available will prepare the student for a multiplicity of traditional and non-traditional career opportunities. Students will

be exposed to such basic scientific concepts as geology, chemistry, physics, biology, and their related technologies. As a result, the student will be better able to understand and appreciate man's role in his biophysical environment. Strong emphasis will be placed on environmental quality, its control, and conservation. Training will be available for direct entry into the world of work or in preparation for technical or professional schools. Environmental studies will involve, among others, training for occupations associated with water treatment, waste disposal (liquid, solid, and nuclear), environmental analysis ecology, air quality control, aquatic technology, agri-business, and fire protection technology. For example, an individual interested in water quality could:

- enter the world of work at the level of a Water Tender, Water Pump Servicer, Water Chemist Helper, Water Filterer Helper; or
- have the foundation to complete advanced training to become a Water Plant Pump Supervisor, Water Treatment Plant Operator, Pump Station Operator; or
- acquire college preparatory courses to become a Chief Engineer in Waterworks, Water Station Engineer, or Hydrologist.

Offerings cited here could use as a satelliting station the local facilities of Dallas Water Utilities.

Conservation The ever increasing population numbers demand that provisions be made for man's basic needs of shelter, clothing, water, and food energy. In the United States the national prosperity has been, in the past, based on an abundance of natural resources and technological innovations. Courses will be offered that can be utilized to alter, in a unique way, the environment and to meet the basic and humanistic demands of the growing population. Natural Resource Use and Management courses will provide individuals with the "know how" to enter the job market with salable skills or the foundation needed for technical and professional school admission. Courses leading toward preparation for Soil Conservationist, Wildlife Fish and Game Management, Agronomist, Fish Hatchery Supervisory, Natural Science and History Museum Curator, Forestry Conservationist, Land Use Specialist, Food Technologist, Minerologist, Pharmacologist, or Nutritionist may be offered.

As an example, an individual would have the option to:

- enter the work force as a Laboratory Helper, Soil Analyst Helper, Agronomist Helper; or
- with additional technical training, become a Soil Conservation Technician; or
- enter college and complete training to become a Soil Scientist, County Agriculture Agent, Soil Conservationist, Soil Fertility Expert.

Energy While petroleum is the most versatile energy source known to man, science and technology are assuming an increasing role in the attempt to find alternative energy sources to meet the demands of the consumers. Wise use of fossil fuels, nuclear energy, geothermal energy, tidal energy, solar energy, energy from wind and water and their conversion can make it possible to supply the needs of the energy age.

Training in the sciences and technologies associated with energy production and use will be a key feature of the program of the Science & Technology Magnet School. The presence of energy-oriented business and industry in the Dallas Metroplex offers a "ready" market for trained personnel at all levels. The course offerings will provide the student with the knowledge base and skills necessary to enter the job market.

Individuals will be prepared to enter the work force at various levels from operations through management. Satellite Centers are available in electronics, the petroleum industry, power companies, urban transportation, solar energy, nuclear energy, fluid power, turbine engine technology, and others will be a part of this preparation.

An example might be that of an individual interested in the petroleum industry who could:

- enter the work force as a Production Worker, Assistant Operator, Still Pump Helper;
- with additional technical training, become a Chief Operator, Still Pump Operator, Oil Treater;

- have college admission requirements that will prepare them for entry into fields such as Petroleum Engineer, Petroleum Chemist, Petroleum Biologist, Geophysicist.

Academic Program The planned academic offerings will include the basic subjects, English, mathematics, and social studies, required for graduation and college admission. A wide range of elective courses in foreign languages and basic subjects, adaptable to individual needs, from remedial through high academic and honors classes will be available. Because of the unique "satelliting" concept that will be employed in course delivery, mastery of skills can be maximized. A strong emphasis will be placed on the essentials needed for record keeping and reporting, especially the oral and written communicative skills. Even though all courses will be designed to emphasize the school's major thrusts, they will enable students to master baseline objectives satisfactorily.

Counseling Program Due to the career emphasis placed on all programs, a very strong computer counseling component will be required. Students will be scheduled for courses related to their career choices over a three-year sequence. Such scheduling will require computer time, such that a computer designed for use at the Science & Technology Magnet School will become a necessity.

SCIENCE & TECHNOLOGY MAGNET SCHOOL

SATELLITING

The Science & Technology Magnet School will be designed for programs which are unique among all magnet high school programs in many ways. One unique component of the programs offered will involve the concept of satelliting. Satelliting is a learning strategy which will be designed for students both inside and outside the school walls. It is planned that twenty to twenty-five external satellite centers will be developed for this magnet school, in addition to thirty to thirty-five internal satellite centers.

An external satellite learning area would be one which is located off-campus at a site, such as the Museums of Natural History, Health, and Science; the Aquarium; the Zoo; the Dallas Environmental Education Center; the Dallas Living Materials Center; other DISD magnet schools; or at industrial and public utility sites. Satellites could be developed at the Dallas Water Treatment Plant, the Sewage Disposal Plant, technical instruments plants, oil companies, field research labs, transistor manufacturing companies, and other various laboratories. These satellite areas would function in the following manner.

> Students would gather at the STMS to board a bus, which could probably be driven by the teacher. The twenty-five students assigned to the teacher would leave for the satellite center at about 8:30 A.M. Students, teacher, and bus would be expected to remain at the satellite area for a minimum of five hours, returning to the magnet school center in time for dismissal in the afternoon. The teacher would not only be the driver of the bus, but would also be the manager of the class at the center. The teacher would be responsible for the ongoing daily studies for this particular course. The course could be any of the science or science-related courses in which technology and science would be taught and used. The teacher, working with technicians, technologists, and other science-oriented employees of the satellite organization, would provide instruction in a classroom furnished by the host firm and would give practical in-shop training and experience in the ongoing operation of the industry or governmental body. Such a satellite operation is conceived to be for a period of three weeks; i.e., five hours a day, five days a week, for three weeks. This would be an accumulation of seventy-five clock hours of actual classroom instruction. The amount of time

normally devoted to a regular 55-minute twelve-week quarter is less than 60 hours; therefore, this arrangement will meet state clock hour requirements for accreditation. The students would then be given credit in one quarter of the particular discipline in which they were satellited.

Many unique features can be developed in such a program of off-campus satelliting. Students will have the opportunity to see technology and science in operation and to become involved with experts in the field. The cost to the industries and governmental agencies supplying these experts would be minimal since students would be on site with the employees who would not have to leave their place of employment to visit a school for presentation and instruction. Students would have an opportunity to interact with experts and to come away from a three week course with a basic knowledge of the type of activity involved in an occupational area and a real idea of a "job description" that is unavailable to them in the present school structure. Many of the DISD's baseline instructional objectives can be addressed effectively through carefully developed off-campus satellite programs and courses of study.

Internal satellite centers are also planned. These would resemble the external satellite centers, except that the internal satellite centers would be located within the STMS itself. A teacher and twenty-five students would be assigned to an area developed to accommodate this number of student stations. The teacher would be assigned to this group of students for five hours a day, five days a week for three weeks. During that time interval, the teacher would have the responsibility of causing students to achieve the mastery objectives listed for that specific academic course. For example, courses in English, social studies, mathematics, and others, which may be required for graduation, could be taught in an internal satellite configuration. The teacher would be in a position to use all forms of media available in the school, in addition to computer-managed instruction and computer-assisted instruction, to provide much individualized and specialized instruction during a five-hour block of time. While students are involved in an internal satellite, there would be time for a scheduled physical activity program needed to meet state requirements. Recreative arts, physical education, some of the creative arts program, and possibly programs that would require a great deal of physical manipulation, such as typing might be scheduled

during the time the students are working at the STMS in the five-hour internal satellite program. The sixth and seventh hours each day could be used by students to participate in these more physical activities which would continue for twelve weeks, or sixty hours, in order to receive one quarter credit in typing, physical education, or some phase of creative arts.

Through the use of computer management and computer counseling, students would be able to be tracked and programmed so that the complex logistics involved in accounting for students and in programming students could be achieved in an expeditious manner.

Satelliting--both internal and external--appears to be the most practical way to achieve both uniqueness and desired student body size in the Science & Technology Magnet School. Through the satelliting concept, many technologically-oriented occupational areas can be explored by a significant number of students.

In addition, industry and governmental agencies in the metroplex area would be able to see students early in the student's life and would be in a position to encourage the students to develop skills and to seek training in career options involving technology as it is ongoing now and as it will be in the future. Through this innovative educational process called satelliting, the DISD will be able to work with students and the community for betterment of the total society in the years to come.

SCIENCE & TECHNOLOGY MAGNET SCHOOL

FACILITY AS AN INSTRUCTIONAL TOOL

The STMS facility should be designed so it will both support and actively contribute to the instructional process. The building and its services must illustrate the current state of technology in the conservation and utilization of resources, including services, materials, and sources of energy. It should be cost effective in these applications and adaptable to technological developments of the immediate future.

The building's day-to-day resources consumption should be instrumented and controlled so that all students can use the building as a working laboratory, while the services and systems maintain efficient services and environmental control (visual, acoustic, thermal, and spatial) throughout the building. At a minimum, baseline data should be available from the building's systems (gathered by students) to provide a basis for environmental and conservation studies conducted in laboratories. If possible, the systems should allow for some controlled variations. For example, the building's services and systems should be instrumented to allow monitoring total consumption/delivery and monitoring of selected spaces. They should also have secondary controls on selected components (e.g., air volume, water temperature, and economizer cycle) to produce valid experimental data for the instructional program.

The building must also be planned to allow the study of various techniques and equipment and their impact on the use of alternative energy sources and resources. This would most likely take place in specially designed laboratory facility(s). For example, the facility should provide controlled laboratory areas where the students can study such topics as the effectiveness of various conservation fixtures and insulation products; uniform vs. task-oriented lighting; sources of energy and the generation of pollutants; conservation through recycling water; and the use of earth as an insulator.

The facility should allow those receiving technical training to monitor

the appropriate facility component as part of their individual instructional program. For example, the students being trained in solar energy applications should have access to, and monitor the operation of, any primary or supplementary solar energy utilization in the facility; or, students being trained in water quality control should be able to monitor water treatment and water quality in its various uses within the facility (tap water, purified water, recycled water, closed hot water heating/air conditioning system, liquid heat exchange in a solar system, etc.).

Finally, the facility and the site should be developed so they complement each other in the major emphases of the STMS. The building should be situated to maintain the natural learning environment to the extent possible and to accommodate diverse components, such as wind-powered generating equipment and a water purification bed.

CLUSTER PROGRAM DESCRIPTIONS

Alternate Energy Technology

Power Transmission Technology

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Alternate Energy Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Power Transmission *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Chemistry I	3 credits
Power Transmission *	6 credits
12th Grade	
Integrated Physics	3 credits
Technical Report Writing	1 credit
Power Transmission *	15 credits

* Power Transmission courses will be selected from the Alternate Energy cluster course list based upon need, interest, and career aspirations of the individual student.

Alternate Energy Technology

Alternative Sources I
(Nuclear, Geothermal, and Hydro Power)

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Alternate Energy Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Alternate Energy *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Chemistry I	3 credits
Alternate Energy *	6 credits
12th Grade	
Integrated Physics	3 credits
Technical Report Writing	1 credit
Alternate Energy *	15 credits

* Alternate Energy courses will be selected from the Alternate Energy Technology cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Alternate Energy Technology

Alternate Sources II

(Fossil Fuels, Solar, and Wind)

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Alternate Energy Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Alternate Energy *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Alternate Energy *	6 credits
Chemistry I	3 credits
12th Grade	
Integrated Physics	3 credits
Technical Report Writing	1 credit
Alternate Energy *	15 credits

* Alternate Energy courses will be selected from the Alternate Energy Technology cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Alternate Energy

Engineering Graphics I
Survey of Energy Sources
Introduction to Electrical Circuits
Introduction to Geothermal Energy
Introduction to Wind Power Technology
Introduction to Energy Sources
Physical Geology
Fundamentals of Electrical Machines
Electrical Power Systems
Fossil Fuels Technology
Hydro Power Technology
Introduction to Geothermal Energy
Radiation Detection and Measurement
Fossil Fuels Recovery Techniques
Wind Energy Technology
Integrated Physics
Engineering Graphics II
Introduction to Statics
Environmental Applications
Soils Technology
Surveying Techniques
Electrical Power Generation
Industrial Safety
Automatic Control Systems
Nuclear Power Technology
Solar Technology I
Quality Assurance and Quality Control
Process Instrumentation
Power Plant Systems
Introduction to Nuclear Systems
Heat Transfer and Fluid Flow
Electrical Control Circuits
Electro Power Generator Characteristics and Specifications
Production and Utilization of Fossil Fuels
Solar Application
Wind Energy Technology
Solar Technology II

290

February 6, 1979

Pre-Engineering

Alternate Energy, Electronics, Laser Optics, Environmental, General

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History	3 credits
Physical Education	2 credits
Health I	1 credit
Pre-Engineering Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Pre-Engineering *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Chemistry	3 credits
Pre-Engineering *	6 credits
12th Grade	
Math IV/Computer Applications	3 credits
English IV	3 credits
Integrated Physics	3 credits
Pre-Engineering *	9 credits

* Pre-Engineering courses will be taken from the following list based upon need, interest, and career aspirations of the individual student. Each Pre-Engineering student should plan his/her schedule to allow for a foreign language if possible.

Aquatic Ecology
Biology
Engineering Graphics I
Introduction to Computers
Introduction to Electrical Circuits
Introduction to Renewable Natural Resources
Laboratory Techniques and Technical Illustration
Machine Terminology
Statistics and Computer Applications
Survey of Ecosystems
Survey of Energy Resources

Advanced Topics in Math
American History
Aquatic/Marine Biology
Bacteriology
Chemistry
Computer Applications
Computer Operations I
Computer Programming I
Conservation Seminar
Fundamentals of Fire Protection
Geology
Geology I
Introduction to Agriculture Chemicals
Introduction to Electronics
Introduction to Energy Sources
Introduction to Geothermal Energy
Introduction to Laser-Optics
Introduction to Office Machines
Introduction to Water Utilities
Introduction to Wind Power Technology
Materials Testing
Reaction Engines
Soils Technology
Typing
Waste Water Management
Advanced Biology
Advanced Chemistry
Air Pollution Control
Application of Agriculture Chemicals
Botany: Woodlands
Building Codes and Construction
Business Math/Statistics/Computer Applications
Computer Hardware
Computer Programming II
Economics
Electrical Power Systems
Electronic Assembly I
Electronic Circuits
Environmental Chemistry
Fire Protection Systems
Fire Science Chemistry
Fluid Power/Hydraulics
Forest Management
Fossil Fuels Recovery Techniques
Fossil Fuels Technology
Fundamental Pump and Filtration Systems
Fundamentals of Aquatic Biology
Fundamentals of Electrical Machines
Geometrical Optics and Fabrication
Hazardous Materials
Hydro Power Technology
Hydrology/Hydrography

Introduction to Industrial Coatings
Logic
Micro Circuits I
Physics of Materials Reclamation
Problems of Democracy
Program Maintenance and Conversion
Quality Assurance and Quality Control
Radiation Detection and Measurement
Regulator and Amplification Techniques
Solar Technology I
Statics
Surface/Ground Water Production
Surveying Techniques
Transistor/Integrated Circuit Analysis
Typewriter Repair I
Water Laboratory Methods
Water Resources Management
Wildlife Biology
Wildlife Management
Wind Energy Technology
Advanced Industrial Coatings
Animal Nutrition
Application Project
Applied Algebra and Algebraic Concepts
Automatic Control Systems
Basic Copy Machine Repair
Calculator Repair
Computer Circuits and Repair
Computer Operating Systems
Computer Operations II
Computer Programming III
Continuous Wave Lasers
Data Control
Digital/Analog Circuits
Digital Circuit Design and Analysis
Digital Integrated Circuits
Digital Systems
Dynamics
Ecological Perspectives
Electrical Control Circuits
Electrical/Electronic Circuit Design
Electrical Power Generation
Electro Power Generator Characteristics and Specifications
Electronic Assembly II
Engineering Graphics II
Environmental Applications for Power Transmission
Equipment Selection and Maintenance
Field Techniques (Aquatic and Terrestrial)
Fire and Arson Investigation
Fire Fighting Tactics and Administration
Fire Prevention
Fire Protection Equipment
Fire Safety Education

Fisheries(Ichthyology)
Heat Transfer and Fluid Flow
Industrial Fire Protection
Industrial Safety
Industrial Waste Water Disposal
Industrial Waste Water Treatment
Integrated Environmental Studies
Introduction to Ancillary Machines
Introduction to Data Processing
Introduction to Instrumentation
Indroduction to Nuclear Systems
Introduction to Statics
Lakes and Waterways Management
Laser Applications
Laser Electro-Optics Devices
Materials Reclamation Seminar
Micro Circuits II
Micro Processor Circuits
Micro Processor Design
Micro Wave Systems
Noise Pollution Control
Nuclear Power Technology
Park Management
Peripheral Equipment Operations
Philosophy of Science
Plant Propagation
Power Plant Systems
Printed Circuit Manufacturing Techniques
Problems of Democracy
Production and Utilization of Fossil Fuels
Pulse Techniques
Pulsed Lasers
Quality Control
Quality Control Techniques
Recreational Land Use
Research Design
Solar Application
Solar Technology II
Solids Treatment and Disposal
Statistics/Computer Applications
Systems Analysis and Design
Typewriter Repair II
Urban/Land Use Planning
Urban Parks Management
Utilities Calculations
Water Plant Operations
Water Pollution Control
Wave Optics
Reaction Engines
Physical Geology
Instrumentation
Quality Control

291

February 6, 1979

Eelctronics Technology

Electro-Mechanical

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Electronic Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Electro Mechanical *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Electro-Mechanical *	9 credits
12th Grade	
Technical Report Writing	1 credit
Electro-Mechanical *	18 credits

* Electro-Mechanical courses will be scheduled from the Electronics cluster course list based upon need, interest, and career aspirations of the individual student.

Electronics

Laser-Optics

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Electronic Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Laser-Optics *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Integrated Physics	3 credits
Laser-Optics *	6 credits
12th Grade	
Technical Report Writing	1 credit
Laser-Optics *	18 credits

* Laser-Optics courses will be scheduled from the Electronics cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Electronic Technology
Industrial Electronics

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Electronic Technology Orientation	3 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Industrial Electronics *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Industrial Electronics *	9 credits
12th Grade	
Technical Report Writing	1 credit
Industrial Electronics *	18 credits

* Industrial Electronics courses will be selected from the Electronics cluster course list based upon need, interest, and career aspirations of the individual student.

Electronic Technology

Introduction to Electrical Circuits
Engineering Graphics I
Introduction to Electronics
Introduction to Office Machines
Introduction to Laser-Optics
Electronic Assembly I
Integrated Physics
Electronic Circuits
Regulator and Amplification Techniques
Transistor/Integrated Circuits Analysis
Micro Circuits I
Typewriting Repair I
Geometrical Optics and Fabrication
Automatic Control Systems
Process Instrumentation
Electronic Assembly II
Quality Control Techniques
Printed Circuit Manufacturing Techniques
Electrical/Electronic Circuit Design
Technical Report Writing
Digital Circuit Design and Analysis
Pulse Techniques
Micro Processor Circuits
Micro Wave Systems
Micro Circuits I
Micro Circuits II
Micro Processor Design
Calculator Repair
Computer Circuits and Repair
Basic Copy Machine Repair
Introduction to Ancillary Machines
Typewriter Repair II
Continuous Wave Lasers
Pulsed Lasers
Wave Optics
Laser Electron-Optics Devices
Laser Applications
Digital Integrated Circuits
Digital Systems
Pulse Techniques
Applied Integrated Physics
Digital/Analog Circuits

February 6, 1979

Environmental Technology

Water Management

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Environmental Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Water Management *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Water Management *	9 credits
12th Grade	
Technical Report Writing	1 credit
Water Management *	18 credits

* Water Management courses will be selected from the Environmental Technology cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Environmental Technology
Conservation

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Environmental Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Conservation *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Conservation *	9 credits
12th Grade	
Technical Report Writing	1 credit
Conservation *	18 credits

* Conservation courses will be selected from the Environmental Technology cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Environmental Technology

Living Systems

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Environmental Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Living Systems	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Living Systems *	9 credits
12th Grade	
Technical Report Writing	1 credit
Living Systems *	18 credits

* Living Systems courses will be selected from the Environmental Technology cluster course list based upon need, interest, and career aspirations of the individual student.

Environmental Technology

Fire and Fire Safety

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Environmental Technology Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Fire and Fire Safety *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Fire and Fire Safety *	9 credits
12th Grade	
Technical Report Writing	1 credit
Fire and Fire Safety *	18 credits

* Fire and Fire Safety courses will be selected from the Environmental Technology cluster course list based upon need, interest, and career aspirations of the individual student.

Environmental Technology

Introduction to Agriculture Chemicals
Conservation Seminar
Physical Geology
Geology
Soils Technology
Fundamentals of Aquatic Biology
Surface/Ground Water Production
Hydrology
Water Resources Management
Physical Geology
Air Pollution Control
Surveying Techniques
Physics of Materials Reclamation
Application of Agriculture Chemicals
Introduction to Industrial Coatings
Forest Management
Wildlife Management
Botany: Woodlands
Environmental Chemistry
Wildlife Biology
Solids Treatment and Disposal
Industrial Waste Water Treatment
Water Plant Operations
Lakes and Waterway Management
Utilities Calculations
Water Pollution Control
Plant Propagation
Noise Pollution Control
Advanced Industrial Coatings
Materials Reclamation Seminar
Urban/Land Use Planning
Park Management
Animal Nutrition
Fisheries (Ichthyology)
Equipment Selection and Maintenance
Aquatic Ecology
Engineering Graphics I
Surveying of Ecosystems
Introduction to Renewable Natural Resources
Introduction to Water Utilities
Aquatic/Marine Biology
Bacteriology
Waste Water Management
Fundamentals of Fire Protection
Materials Testing
Building Codes and Construction
Fire Science Chemistry
Fire Protection Systems
Hazardous Materials

Fire Prevention
Fire Fighting Tactics and Administration
Fire Protection Equipment
Fire and Arson Investigation
Fire Safety Education
Industrial Fire Protection
Field Techniques (Aquatic and Terrestrial)
Urban Parks Management
Recreational Land Use
Ecological Perspectives
Integrated Environmental Studies

February 6, 1979

Pre-Professional Science

Advanced Science

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Advanced Science Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Advanced Science *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Advanced Science *	9 credits
12th Grade	
Math IV/Computer Applications	3 credits
English IV	3 credits
Economics/Problems of Democracy	2 credits
Advanced Science *	10 credits

* Advanced Science courses will be selected from the Advanced Science cluster course list based upon need, interest, and career aspirations of the individual student. The Advanced Science student should include a foreign language in his/her schedule if possible.

February 6, 1979

Pre-Professional Science

Laboratory Techniques and Technical Illustration
Chemistry
Biology
Advanced Biology
Advanced Science
Research Design
Logic
Philosophy of Science
Engineering Graphics
Geology

Pre-Professional Mathematics

Advanced Mathematics

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Advanced Mathematics Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Biology	3 credits
Advanced Mathematics *	3 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Chemistry	3 credits
Advanced Mathematics *	6 credits
12th Grade	
English IV	3 credits
Integrated Physics	3 credits
Economics/Problems of Democracy	2 credits
Advanced Mathematics *	10 credits

* Advanced Mathematics courses will be selected from the Advanced Mathematics cluster course list based upon need, interest, and career aspirations of the individual student.

Pre-Professional Mathematics

Algebra II
Solid Geometry
Logic
Trigonometry
Linear Programming
Number Theory
Probability and Statistics
Analytical Geometry
Differential Calculus
Integral Calculus
Descriptive Geometry
Computer Programming I
Computer Programming II

Scientific Data Processing (Computer Technology)

Data Processing, Programming

9th Grade	
Math I/Computer Applications	3 credits
English I	3 credits
World History/World Geography	3 credits
Physical Education	2 credits
Health I	1 credit
Data Processing Orientation	6 credits
10th Grade	
Math II/Computer Applications	3 credits
English II	3 credits
American History	3 credits
Physical Education	2 credits
Health II	1 credit
Computer Technology *	6 credits
11th Grade	
Math III/Computer Applications	3 credits
English III	3 credits
Outdoor Education	1 credit
American Government	2 credits
Computer Technology *	9 credits
12th Grade	
Technical Report Writing	1 credit
Computer Technology *	18 credits

* Computer Technology courses will be selected from the Scientific Data Processing cluster course list based upon need, interest, and career aspirations of the individual student.

February 6, 1979

Scientific Data Processing

Engineering Graphics I
Introduction to Computers
Machine Terminology
Typing
Introduction to Computer Operations
Computer Programming I
Introduction to Electrical Circuits
Computer Hardware
Computer Programming II
Program Maintenance and Conversion
Introduction to Data Processing
Micro Circuits I
Data Control
Peripheral Equipment Operations
Computer Operations II
Computer Applications
Computer Programming III
Applied Algebra and Algebraic Concepts
Computer Operating Systems
Systems Analysis and Design
Application Project

310

milwaukee public schools

DIVISION OF CURRICULUM AND INSTRUCTION
Administration Building
5225 West Vliet St.
P. O. Drawer 10K
Milwaukee, Wisconsin 53201
Area 414: 475-8393

REPORT ON SCIENCE AND TECHNOLOGY MAGNET SCHOOL

by
Neal Eigenfeld
Department of Elementary and Secondary Education

I realize that your total program has been carefully put together with contributions from many sources and with many hours of deliberation. My observations are necessarily superficial because of the little time I had in Dallas; however, with these shortcomings in mind I hope you find some of my comments helpful.

- All of your total immersion courses seem designed to be taught by science/technical personnel. Consider developing some courses where the expertise of social studies personnel might be used, (e.g. Environmental Law, Environmental Economics, Urban Sociology, etc.)

- Consider publicizing your Science and Technology Magnet School by holding a Science and Technology Symposium for students and community next fall. Invite experts to speak on areas that will be part of your science and technology curriculum. Publicize event via television, newspapers, schools, etc.

- Consider infusing environmental/energy concepts in many of your non-science courses.

- In your environmental center, consider extending services to elementary schools so that repeat trips by the same class are built into the program. Students can observe growth in animals, plants, etc. and have a greater opportunity for more in-depth exploration.

- Consider setting aside acreage for students to plant trees. Each class that comes out can plant a few trees, learning proper procedure and in future visits observe the trees' growth.

- Establish some relatively rare (unusual) animals at environmental center - albino armadillo or? Can be used as focus of lesson or feature on publicity for center, i.e., "Visit the Environmental Center and see the albino armadillo."

- Consider adding 220 volt electric range in Central Storage Area for biology/environmental labs. Teachers that have them in Milwaukee's newest facilities find them very useful.

- Consider having a portable demonstration table assigned to each laboratory (as Sheldon, #R-21000). We use them in our new labs that do not have the traditional front demonstration table. They are great in bringing materials from Central Storage to the laboratory and also in having movable demonstration surface.

- Consider adding linear switch panels for regulated AC-DC current at each laboratory station in your physics/engineering labs. With the new type power panels available, the objectionable line fluctuation have been kept to a minimum. These are 100% better than having individual power supplies at each station. (See accompanying literature from Hampden.)

- Under separate cover I am sending the criterion referenced test materials and the guide, "Writers and the Environments."

CRITIQUE OF THE DISD
SCIENCE & TECHNOLOGY MAGNET SCHOOL
PROJECT (STMS)

Walt Elliott, Ph.D.
Physics Consulting Services
and
Physics Department
California Polytechnic State University
San Luis Obispo, California

The findings are presented in five sub-sets: Management Plan; Building Plan; Seagoville Satellite; Curriculum Development; and Special Comments and Recommendations. Each sub-set is presented below, along with pertinent comments:

The Management Plan

This plan, based principally upon Provus' Discrepancy Evaluation Model, appears to be detailed adequately, to be functional, to be well-conceived generally, and to have accomplished well the Project's goals through this stage of development. While the Staff has demonstrated application of the Model to development of a Science & Technology Magnet School, the Model's generality makes it an exportable product and useful in the planning of a magnet school anywhere.

Suggestions for Management Plan revision were made to appropriate staff, and these constituted minor editorial changes only to insure easier reading by lay persons.

The Building Plan

A review of the Building Plan indicated comprehensive treatment of site selection and of building design. Attention has been paid to the unique construction features required to effect educational activities compatible with STMS philosophy and objectives.

No suggestions are offered for alteration of the STMS Building Plan. The Staff is to be commended for this product's quality.

Seagoville Satellite

The Seagoville facility was perceived as a functional environmental learning center, complete with both "indoor" and "outdoor" classrooms, and ideally suited for use as a satellite to the STMS Environmental Technology Cluster. The "indoor classrooms" offer lecture-demonstration facilities, teaching materials preparation areas, equipment storage areas, student project areas, and teaching displays consisting of flora and fauna. These numerous indoor displays consisted of both preserved and live specimens. The "outdoor classrooms" consisted of nature trails, a garden, two lakes, ponds, a bog and 200 acres of land replete with native flora and faura.

The Seagoville facilities were evaluated in terms of current teaching programs and in terms of potential as a satellite for the STMS Environmental Technology Program Cluster.

This Seagoville facility appears ideally-suited for such satelliting and appears capable of supplying fully the facility requirements for attainment of the Environmental Technology Program Cluster's objectives. The site appears

ideal for individualized and small-group instruction, for "total immersion" instruction, and for meeting the STMS "Facility as a Tool of Instruction" criterion. This evaluator is impressed strongly and favorably with the educational potential of this site and is excited over its impedance match with the facility needs for Environmental Technology Cluster satelliting.

Curriculum Development

Curriculum development appeared to be organized particularly well and appeared to be functioning smoothly. For example, use of the writer's product Control Sheet (with appropriate check lists) assures that during development, each new module is examined sequentially for specific production criteria.

Suggestions for improvement are:

- Writers should insure that module objectives state explicitly career, technical and scientific applications. For example, "The Quadratic Equation and some Technological Applications."

- Writers should be alerted to the phenomenon of perpetuity* of invalid statements and their undesirability in a science and technology magnet school curriculum. Some examples of invalid perpetuity would be:

  1) "We must conserve energy" for "We must conserve energy resources." Thermodynamics's First Law assures that energy must be conserved in these kinds of processes; it is the Second Law with which we deal in most natural and anthropogenic processes.

  2) "Place a mass on the table" for "Place an object on the table." Inertial mass (as in F=ma) is a property of an object; it is, therefore, not an object or a thing to be placed somewhere.

  3) "Explain how two positive charges (or magnetic poles) repel one another" for "Explain how two positively-charged bodies (or two bodies of north polarity) repel one another." Charge and polarity are properties of "things" (bodies, objects, etc.) and not the "things" which are mutually repelled.

  4) "For every force there is an equal and opposite force" for "For every contact force there is an equal and opposite contact force." The Lorentz Force, basic to all electrodynamics, does not require an equal and opposite force.

  5) "Three methods of heat transfer are conduction, convection, and radiation." Radiation is not heat in transit. Radiation is electromagnetic energy in transit, which can be transformed to heat energy upon arrival; but it is the electro magnetic energy which does the transferring.

- Writers should be reminded that science and technology are not the same by definition, by activity, or by philosophy. Scientists and technologists play roles quite different, yet equally important, in modern society.

- The addition of basic analog computer technology to the curriculum is recommended.

- Although most experienced teachers may be able to write to a desired grade level using a "seat of the pants" approach, it is recommended that the modules produced be scientifically tested for reading comprehension level. The DISD Research and Evaluation group would likely have this capability. If so, such expert analysis could be done "in house."

---

* Perpetuity of scientific and technological "folklore" via textbooks and related curriculum materials.

- If the capability exists "in house," and if time and funds permit, it appears desirable to determine the levels of concept development (levels of abstraction) for the modules.

Special Comments and Recommendations

This section is a catch-all for the following:

- It is recommended that a follow-up study be made of STMS students. This study would be used as a measure of effectiveness of the STMS curriculum and as an index for changes to that curriculum. Such feedback might maintain a more kinetic curriculum "in step" with students' career needs.

- It is recommended strongly that the new modules be field-tested prior to adoption in 1980-81.

- It is recommended that a cognitive style mapping program be implemented primarily for use in counseling students. Cognitive mapping permits optimum fit between student learning styles, instructional styles, and instructional materials. Mapping should be effected on a volunteer basis because experience indicates that students are keen to learn in what modes they learn best.

- While this evaluator was pleased to see the inclusion of women and blacks in the Curriculum Writers Group, the unavailability of writers of Hispanic origin was unfortunate. They may have brought a special sensitivity to the Project. It is recommended that their input be solicited again in the future.

- The strongest suggestion for curriculum development improvement is that each module be edited by an expert. These experts should not be "in house." They should be outside consultants whose professional specialities include the subject matter found in the modules they edit. This kind of editing is absolutely necessary for a science and technology magnet school module, because the correctness of the subject matter content and the technical vocabulary must be above question.

In closing, I rate highly the current status of the DISD STMS Project, evaluated particularly in terms of its Management Plan, its Building Plan, and its Curriculum Development.

The Science and Technology Magnet School concept is exciting. I believe strongly that the STMS will present unique, educational opportunities needed desperately by a significant segment of the high school population.

SCIENCE & TECHNOLOGY MAGNET SCHOOL

DALLAS, TEXAS

by

William L. Smallwood
Head, Science Department
Ketchum-Sun Valley Community School
Sun Valley, Idaho

The following report is based upon a visit to the Dallas STMS Project on June 25-27, 1979. The comments and recommendations are based almost entirely upon my work with the curriculum staff during the three days -- work for which I feel competent because of my experience as a science teacher, consultant, and author. However, I have never been an administrator, nor have I had any training that might lend credence to what few impressions I obtained while reviewing the STMS Management Plan. Therefore, I am reserving comments except to say that it does make good sense to capitalize on the experience of the DISD staff by having them develop a magnet school model that others can emulate.

BUILDING PLAN

I examined the building plans, schematics and mockup of the proposed STMS. The design seems to be compatible with the philosophy and curriculum that I envision for the school. The laboratories and prep rooms are of the types that I observe in most first class high schools, and are suitable for the highest quality of instruction that I have seen or imagined.

SEAGOVILLE ENVIRONMENTAL CENTER

DISD is extremely fortunate to have a prime piece of real estate, which is the Seagoville Environmental Center, and the services of the multi-talented, energetic Dr. Robert Patton who is the Center Director. Practically all students in the urban environments of our country have to study nature in the sterile classrooms of concrete buildings surrounded by corridors of asphalt. The lucky few, in places like De Kalb County, Georgia and Fairfax County, Virginia, can study the living environment in natural surroundings and learn that there is something in the wilds besides people, rats, pigeons, and cockroaches.

The students in DISD are just beginning to utilize the Seagoville Center on a limited basis. In an ideal outdoor setting they are learning how all life is interdependent, why everyone should give thanks to green plants for what they do, that chickens lay eggs, that bees pollinate flowers, and that vast numbers of invisible, insignificant creatures must perform their tasks properly or we humans will not breathe or partake of our daily bread.

In short, I am greatly impressed with the Seagoville Center, its director, and the limited use that Dallas students have so far been able to make of it. But somehow in some way, the administrators and patrons need to find a way to maximize its utilization. One way is to satellite part of the STMS Environmental Biology course at the Center which is a recommendation that will be explained in a later section.

THE SCHOOL AND ITS PHILOSOPHY

In my opinion it is imperative that the philosophy of the STMS should parallel that of the enterprises of science and technology. To frame this recommendation in perspective we must ask the question: What do scientists and technologists do? Answer: They solve problems, or try to solve problems. Period. No more, no less. Moreover, scientists and technologists are dedicated problem solvers, as addicted to their way of life as the chronic solver of crossword puzzles in the morning newspaper. In addition, the range and duration of their problems is nearly infinite. One may work a few hours and develop a fix for the leaking seals of a rotary engine. Another may labor for weeks sorting out the technical maelstrom in a microwave switching site. Still others may labor for years trying to develop tertiary recovery techniques from oil wells, while all the time knowing that they may not succeed within their lifetimes.

Just as scientists and technologists are problem solvers, so must be the students of the STMS. And, just as scientists and technologists enjoy the challenge of the unknown and unsolvable problems, so must the students of the STMS. However, problem solving is not for everyone, and, in fact, only a small minority of students seem well suited by personality to endure the chronic anxiety and frustration of being continuously confronted with difficult problems.

All of the above is a necessary prelude to the recommendations I want to make regarding the STMS philosophy and motto. I recommend that the philosophy should stress the importance of problem solving in all aspects of the educational process, in history and English classes as well as in those that relate to science and technology. Second, I recommend the adoption of a motto that will convey the spirit of the school to prospective students, and, in addition, provide on-

going reinforcement for students who will endure its rigors. I am reluctant to suggest a specific motto, but something like WE LOVE TO SOLVE TOUGH PROBLEMS, or WE LIKE TOUGH PROBLEMS would be simple enough to convey the necessary message.

CURRICULUM

I was very impressed with the high quality of the curriculum writing staff. Those with whom I worked for the three days are highly motived and seem dedicated to producing a curriculum that should serve the unique needs of this magnet school.

I have the following recommendations:

1. Environmental Biology. There are two serious ommissions in the present outline for Environmental Biology. One is the nature and importance of micro-organisms, particularly bacteria. These organisms are important for several reaons. They comprise a substantial segment of the world of life, and, in actual numbers, are thousands of times more plentiful than any other major group of organisms. Collectively, they are the unseen, unheralded placenta of all ecosystems, responsible for nourishing all plants, and, in turn, all animals because of their recycling activities. The study of microbiology is very relevant to many of the technological problems that STMS students will face. For example, there is little doubt that the microbe will be called upon to help solve the food crises that will worsen in the third and fourth worlds. The microbe is certain to help us solve our fuel problems by the bioconversion of wastes and other organic materials. For these reasons I recommend that the Environmental Biology course outline by revised to include one module on microbiology, along with enough laboratory activities to allow the student to appreciate the nature of these organisms.

   A second omission is the lack of a specific plan to aquaint students with the basic forms of indigenous life. Specifically, I recommend: (1) that the Seagoville Environmental Center be utilized as a satellite for teaching a module of the Environmental Biology course, and (2) that the planning staff utilize the talents of Dr. Robert Patton in developing a master list of 200-300 forms of terrestrial and freshwater life the students will (a) learn to recognize by common name, and (b) know the habit, niche, and economic importance of if relevant. While discussing these recommendations

with the curriculum writers, there were two suggestions made that I want to endorse. First, that a slide collection of the master list be developed and made available for use at STMS (and perhaps other schools), and, second, that a pretest be given at the beginning of the year to determine what revisions might be necessary in the master list as the Center becomes better utilized by students prior to their enrollment in Environmental Biology.

2. Physical Geology. I disagree with the structure of the present outline for the Physical Geology course for the following reasons. One, it lacks coverage of plate tectonics concepts that, in my opinion, are essential as background for an understanding of the general structure of the earth and its land forms. Two, there is no treatment of technology that relates to geology. In this regard, I specifically recommend the inclusion of two modules: Mineral Resources of the Earth and Energy Resources of the Earth.

The mineral resource module should include typical extraction technologies and their problems. These might include manganese (sea bed extraction), magnesium (sea water extraction), iron (to illustrate increasingly low-concentrate ore bodies), aluminum (electrolytic extraction), molybdenum (hard rock extraction), and sulfur (the Frasch process). The energy resource module should include technologies and problems of extracting oil, natural gas, uranium, coal, and usable heat from geothermal water and dry hot rocks.

3. Technical Communications. I was thoroughly impressed with the writers who are developing the curriculum for the Technical Communications course. They are dedicated to developing a course that will truly develop broad communication abilities. I made two broad recommendations to this group which I would like to repeat here.

First, I recommend that the course should include activities that will teach students how to write procedures. Anyone who, after buying an unassembled product, has tried to follow the product assembly instructions, knows the frustrations of poor procedure writing.

The second recommendation is to stress "standup" oral communication of all types. Observe a battery of civil engineers bidding for a contract, trying to explain their version of a computerized water system to a city council of lay persons, and the need for more training in the art of "stand-up" technical communication

for scientists and technologists becomes obvious. Included in the various types of "stand-up" training should be extensive practice in the debate of technical subjects. (Example -- Resolved: that all coal fired electric generating plants should be equipped with scrubbers.)

4. Career Education. Some of the writers are finding it difficult to find specific materials on careers that relate to their subjects. A general recommendation is to develop lists of government and industry-sponsored films, particularly when the content is related to technological processes. The films often give excellent examples of a wide variety of occupations, and they can often be followed with brochures and pamphlets from the same sponsor.

CONCLUDING REMARKS

I would be sadly remiss if I did not commend the fine work of Jesse Harris who has been the sheperd for the STMS project since its inception. My high degree of enthusiasm for the Project stems largely from my certainty that Jesse Harris will settle for nothing less than a school that will be a model for the entire nation.

In conclusion, I believe the Dallas STMS is on the right track, right on time, and has the right engineer at the throttle.

TSTI SYSTEM
Texas State Technical Institute
Office of the President
Waco, Texas 76705
(817) 799-3611, Ext. 383

October 10, 1979

Mr. Jesse M. Harris, Director
Science and Health
Dallas Independent School District
Science and Technology Magnet School
3700 Ross Avenue
Dallas, Texas 75204

Dear Mr. Harris:

It was a pleasure to have the opportunity to discuss with you and your staff the plans for the Science and Technology Magnet School to serve the Dallas Independent School District.

The decision to place particular emphasis on scientific and technological occupations, particularly those related to production, utilization, and conservation of energy, and to conservation and restoration of physical environment, is certainly timely and should form a solid foundation for developing the kind of a program that will attract students. From what I have seen of the preliminary design for the facilities, it should be possible at some future date to change the emphasis through a change in the kinds of applications of scientific and technical knowledge being studied. This kind of flexibility, of course, is needed.

Through judicious selection of instructional materials, you should be able to incorporate various levels of mathematics and science and thus accommodate those students who are particularly interesed in further technical study, either in post-secondary occupational education of a technical nature or in science and engineering college degree curricula. With individualized instruction, particularly to the extent that it can be made self-paced, you should be able to establish various levels of achievement which, coupled with students' interest, should provide a basis for counseling graduates of the STMS into post-secondary school activities, training or jobs.

I note that you have taken the conventional approach in the teaching of physical science principles in that you take up each section of physics in a traditional manner independent of other sections. I would like to suggest that you give full consideration to a different method of teaching physical sciences which, I believe, is far more effective for students in science and technology. It is called "unified technical concepts" and is a modularized system in which the important physical concepts basic to mechanics, fluids, thermal, and electrical systems are taught concurrently. Furthermore, the necessary mathematics is taught concurrently and can be applied in the physical science courses, thus making mathematics far more interesting for most students. It should be clearly understood that, in total, the concepts taught in the unified form of physics are the same as in the traditional physics courses, the difference being in the scheduling and in the laboratory applications which in the unified concepts approach are practical rather than theoretical in nature. I would strongly urge that, at minimum, you plan to include an experimental section in the school in which this system is used and conduct experimental studies to measure its effectiveness as compared with the traditional methods of teaching physics.

I would suggest also that in the design of facilities the laboratories for the teaching of physics be contiguous with those of the technical specialties wherever possible. The basic reason for this is to provide a close working relationship between the instructional staff responsbile for the core program of technical concepts and the technical specialists who teach in discreet technologies. As I indicated before, the applications used in teaching the core physics program are practical in nature and much of the equipment necessary to develop these applications can be found in the specialty laboratories.

I note that your plan calls for faculty work areas in which teachers are housed together. This is particularly important if the unified concepts

approach is being used, inasmuch as physics teachers are normally not familiar with applications and need the assistance of technical specialists, in many cases, in developing teaching materials, visual aids, demonstrations, etc.

A study of the schedule reveals that English courses are scheduled for the 9th, 10th, and 11th grades. I assume these are the traditional English courses commonly offered. Technical writing is scheduled for the 12th grade for those students with no external satelliting. It is important for the student's early introduction to technology and technical study to introduce the fundamental forms of technical report writing. Perhaps this could be done in the orientation classes. It is extremely important to establish at an early point the significance of concise accurate reporting, even in simple one or two-page reports. The techniques of using charts, graphs, tables certainly should be taught and proper standards established at an early date in the student's school experience. As a matter of fact, there is good evidence that students develop an increased interest in English when they begin to take pride in well prepared technical reports.

Another technique that you might find useful is the scheduling of mathematics labs. Possibly, this could be accomplished by utilizing some scheduled time in the cluster courses. The math lab technique allows students to concentrate on basic mathematics principles in regular mathematics classes while applications problems using the same forms are taught concurrently by the teachers in the technical courses. This not only has the advantage of reinforcing the student's understanding of mathematics principles but increases his interest in mathematics through a realization that it is a tool without which he cannot hope to learn technology.

May I say again that I enjoyed very much the chance to become familiar with the Dallas Independent School District System of Magnet Schools. On

behalf of the Texas State Technical Institute, may I say that we would be pleased to work with you in any way in the planning or operational phases of the science and technology of magnet schools. Call on us when we can be of help.

Sincerely,

M. W. Roney
President

MWR:etj

COMPUTER SUPPORT FUNCTIONS AT THE SCIENCE AND TECHNOLOGY MAGNET SCHOOL

Report Submitted to

Jesse M. Harris

Director

Dallas Independent School District

October 4, 1979

Prepared by

Robert M. Caldwell, Ph.D.

Division of Educational Studies

Southern Methodist University

Dallas, Texas 75275

325

230.5

Subsequent to my visit with the administrative and instructional support staff of the Science and Technology Magnet School, I would like to make the following observations and recommendations relevant to the purchase and installation of various computer hardware.

Decisions regarding computer configurations are, of course, highly dependent upon the functions those configurations will be asked to perform. At the Science and Technology Magnet School computer systems will be responsible for instruction, instructional support, record keeping, data retrieval and administrative support functions. These various functions can be handled easily by two separate and relatively inexpensive computer systems:

1. Minicomputer System

A variety of mini computer systems and related peripherals are available from reputable vendors at competitive prices. Each vendor can offer an array of options which will allow high speed data retrieval, expandable memory and data processing capabilities which will serve to fulfill the following needs:

a. Pupil attendance accounting

b. Scheduling and administrative support

c. Test scoring, storage, analysis, diagnosis and prescription

d. Referencing of library holdings and access

Data General's Commercial System CS/40 serves as a good example of the type of mini that can handle these various needs. This system is available in five models which offer from 64k bytes of memory to 192k with disk storage capabilities up to 800m. Either the CS40 MODC5 or the MODC6

would serve all of the needs cited above. Keep in mind that you will need maximum storage capacity if you expect to access your library holdings. I recommend the mini system primarily for that reason. Without that requirement many high powered micros could handle your needs although they have trouble supporting terminals without expensive peripherals. A mini system such as Data General's MOD C6 supports 1-9 terminals with 190-MB DG/ disk storage as a standard feature.

I suggest Data General here because it is a system we use at EDS and I am more familiar with it than most others. However, Hewlett-Packard and Texas Instruments also offer fine minicomputers with capabilities that would easily support your needs. None of these minicomputers, however, can be of use to you to deliver computer assisted instruction, especially if you expect to present color and graphics. The Data General system, however, does utilize the COBOL language for application programming and job execution. This is a language used commonly in business and would offer your students an advantage in the job world to have an opportunity to learn its use. For instruction where courseware and games are to be available, microcomputers would best meet your needs.

2. Microcomputer Systems

Like minicomputer systems, micros presently are available in a wide variety of types ranging in price and memory capability. For the various instructional functions these microcomputers will perform it is probably wise to have several different types available for student use. Sophisticated systems such as the Apple II are capable of delivering intricate simulation and problem solving. The Apple II is basically a 48k RAM memory capacity loaded from a disk drive. With related peripherals the

Apple II can run 64k RAM as well as do animation and some sound reproduction. Apple also boasts a growing library of courseware and games which can be used by students.

All micros use the BASIC programming language except for the Texas Instruments 99/4 which uses an assembler language called GPL. All microcomputers utilize assembler languages, of course, but TI's requires special hardware and runs entirely off ROM. Apple assembler is proven and available now. These micros can not only deliver instruction and games from preprogrammed disks or tapes but also allow your students to learn the BASIC language and fundamentals of computer programming at low cost ($2500 per unit).

The Apple computer seems like the wisest choice for microcomputer hardware. It offers:

1. 48k RAM with expandable memory available up to 64k.

2. support of four (4) diskettes per system each of 116k bytes. Compare this with 92k bytes for Atari.

3. sophisticated color graphics and animation (recently developed).

4. a wide array of developed programs available for immediate use.

5. visibility in the educational community with large scale use and experimentation. This allows for sharing with other school districts and universities around the world.

6. all programs developed for current systems are transferable to the next generation of micros.

The TRS80 made by Tandy and distributed by Radio Shack offers fewer advantages than Apple but has available some inexpensive ($500) systems with 4k memory that can be used by students to learn programming in BASIC

language and basic computer applications. I strongly recommend acquisition of at least two of these systems, primarily because of their relatively low cost and their usefulness for developing computer literacy in students.

In summary, I would recommend the following computer systems for the Science and Technology Magnet School:

1. A minicomputer System--as described above to support administrative, data processing, record keeping and library referencing functions detailed earlier.

2. A combination of microcomputers for instructional functions. The number and type of these systems is as follows:

2-3 Apple II (with disk drive)

2 TRS80 (with tape drive)

2 Atari 800 (for games primarily)

These microcomputers should represent a total cost of under $7,000.

329

REPORT OF VISIT
to the
SCIENCE & TECHNOLOGY MAGNET SCHOOL
DISD

Dr. George A. Weygand
Professor of Physics
Bridgewater State College
Bridgewater, Massachusetts

I have presented my observations made during a visit to the Science & Technology Magnet School Project of the Dallas Independent School District on June 18-20, 1979 below. In this report I have commented upon the Management Plan, the Building Plan, the Environmental Center as a Satellite, and the Curriculum Development Project.

The Management Plan

The universal applicability to those concerned with the planning of magnet schools is an important fringe benefit derived from the detailed and functional Management Plan developed by the members of the DISD Science & Technology Magnet School Project Staff.

The plan is well-thought-out with sufficient details to point out the directions and steps to be taken to accomplish stated project goals. In my contacts with similar projects in Massachusetts, I have not seen as comprehensive a management plan as that prepared by the Staff under Mr. Jesse Harris. For this excellent management plan, I offer my congratulations.

The Building Plan

I was favorably impressed with the Building Plan. Careful planning was provided for maximum utilization of the site. The building design has indicated an energy awareness along with concern for providing a functional educational facility.

Adequate concern has been shown to provide for efficient student flow especially due to the inclusion of the courtyard which allows easy access to all areas of the building.

The design of laboratories and teaching stations is educationally sound. Appropriate space has been provided to permit the varied program to function effectively.

Recommendations

Any suggestions that I have related to the Building Plan are minor. I suggest that you consider changing the location of the Graphic Arts room to the outside of the building to provide for natural lighting. I suggest that you consider installing a large single hook-eye in the ceiling of physics and engineering-related labs and teaching stations. These have proven to be invaluable in schools where they have been installed. I recommend that a master gas shut-off valve be located in rooms having gas outlets.

I believe that the proposed Building Plan will adequately provide facilities to house the unique academic program planned for the Science & Technology Magnet School.

The Seagoville Environmental Center

The potential for the utilization of the Environmental Center as a satellite for the Environmental Technology Cluster is exciting. The Center

has many attributes which lead to this conclusion. In relationship to similar centers in other regions, the Environmental Center is conveniently located, has adequate acreage, a variety of natural settings including ponds and marshes, and adequate existing buildings to provide for indoor as well as outdoor learning experiences.

The present staff is capable and obviously totally dedicated to developing the Center to provide a variety of learning opportunities to the DISD students. I recommend that consideration be given to provide additional staff for the Environmental Center so that an even greater number of children will be able to benefit from the offerings of the Center. A high priority should be assigned to providing a vehicle to be used at the Center and on visits to extended areas of the Center.

Curriculum Development

The curriculum development effort is moving very effectively. The curriculum writers are capable and excited about the Project. They appear willing to share their ideas with others and just as willingly accept suggestions from other writers, editors, and visiting consultants. Many of the writers expressed an eagerness to "try out" the materials in a classroom situation.

It is difficult for an individual or even a team to develop modules which will be totally acceptable to all teachers. The selection of topics, activities, reference materials by the writers seem valid and should allow for effective teaching, and therefore be accepted by their colleagues.

There is a great need for careful editing of the material prepared by the writers. Since much of the writing being done consists of generalizing from a variety of reference materials, it is possible for incorrect generalizations to be made. It is essential that the materials written be checked for scientific accuracy by "experts" in the field. While I observed only a few such errors in my contacts with the writers, others may appear in further writings.

I was impressed with the enthusiasm of the English and History writing teams and would encourage other writers to discuss with them areas of joint concern in their modules. There needs to be an effort made to insure that the orientation modules relate to each other, yet are not repetitive.

I recommend that the orientation module entitled LIGHT ENERGY be retitled WAVE ENERGY and include material on sound and acoustics.

I feel it to be important that the writers of orientation modules be aware of the need for presenting an attention-getting activity in the early stages of each module. Also, whenever possible, "humanize" the modules by weaving in history of science and technology materials into the modules.

I was impressed with how much progress has been made in the three weeks that the writers have been working. Much remains to be done. After the editing is completed and the accuracy assured, there is a need to "try out" the modules in the classroom. It is critical that as many problem areas in the modules be removed prior to the opening of the Science & Technology Magnet School. It is my recommendation that the writing program be continued after the summer and that a team of writers be appointed to field test and re-write the modules during the academic year 1979-80.

In conclusion, I am enthusiastic about the unique concepts encompassed in the Science & Technology Magnet School. Especially promising are the ideas of satelliting and total immersion. I shall be watching with interest the further development of the school. I appreciate the opportunity to have been in Dallas to share in this exciting project.

Conclusion

> "The thing that makes all of us hopeful is that the Dallas community has not fled from problems. They're in there with us fighting to meet the needs of all Dallas children. (Sarah Haskins, Building Tomorrow Today, DALLAS Magazine, Sept. 1978.)

Meeting the needs of all children should be the goal of the public schools. There are limits within which each district must operate. Solutions to the complex problems of our modern society's educational needs must be found within these limits. This calls for both creativity and foresight on the part of public school planners.

We have presented here one method for coping with these problems. It is not a solution for all current and future problems, but it is a creative alternative to the traditional direction our public education has taken. This implementation model has been tested and proved effective within the Dallas Public Schools. It can be adapted to the subject, teaching technique, or philosophy that best suits the needs of the students of any district. As those needs change, the magnet school also can change to address the needs of a rapidly changing society.

> "My primary goal is quality education for our nation's young people; and, in that context, Magnet Schools constitute a very long stride on a very long avenue in the right direction." (Senator John Glenn, Magnet Schools: Legal and Practical Implications; Estes, Nolan and Waldrip, Donald R., New Century Education Corp., New Jersey, 1978, p. 34.)

I. ALTERNATIVE SCHOOLS - CASE HISTORIES

BOOKS

1. ALTERNATIVE SCHOOLS: PIONEERING DISTRICTS CREATE OPTIONS FOR STUDENTS

Author: Douglas Watson

Publisher: National School Public Relations Association, 1972.

Summary: A general look at alternative schools and the groups they serve is contained in this book. It touches on several different types of alternatives and the philosophy behind each one.

Alternative Schools also takes a look at the method for starting an alternative school. It looks at such things as evaluating a school, evaluating the students, and projecting costs and financing.

PERIODICALS

2. "THE ILLINOIS NETWORK FOR SCHOOL DEVELOPMENT"

Author: Michael Bakalis

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: Michael Bakalis describes the development and goals of the Illinois Network for School Development.

3. "A CONSERVATIVE COMMUNITY FORMS AN ALTERNATIVE HIGH SCHOOL"

Author: Frederick Bock and Wanda Gomula

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The authors show how Bloomington, Indiana used alternative programs to combat the problem of middle class dropout.

4. "WHY THE SCHOOLS AND THE COMMUNITY NEED EACH OTHER"

Author: Reprinted from September 1978 issue of Dallas Magazine.

Publisher: Building Tomorrow Today, 1978, Dallas Chamber of Commerce, Business Development.

Summary: This is a close look at the Dallas schools and alternative programs. It focuses on the extensive community involvement with the schools that exist in Dallas. The article discusses why and how this interrelationship was formed and how successful it has been.

5. "MAGNET SCHOOLS FAIL IN PHILADELPHIA"

Author: Stephen Franklin

Publisher: Integrated Education, Issue 90, Vol. 15, No. 6, Nov-Dec 1977.

Summary: An analysis of the problems facing the magnet schools in Philadelphia with a realistic appraisal of the underlying causes behind the issues is contained in this article.

6. "AT LAST, AN OASIS FOR THE ATYPICAL STUDENT"

Author: Lana Henderson

Publisher: Dallas Magazine, Dallas: Dallas Chamber of Commerce, Sept. 1977.

Summary: Lana Henderson, in her article "At Last, An Oasis for the Atypical Student," looks at the Dallas Independent School District's alternative school program. The article begins with a series of success stories which the author states are the rule for magnet school students rather than the exception. She discusses the farsighted efforts of the district and the tremendous impact business has had on the success of the Dallas program.

7. "THE ALTERNATIVE SCHOOL CAPITAL OF THE WORLD"

Author: Victor Lipman

Publisher: The Education Digest, Cambridge, Massachusetts: American Education, April 1979.

Summary: The Cambridge, Massachusetts, alternative schools are discussed in this article which looks briefly at each program, why the program was set up, what students it attracts, and how successful the program has been.

8. "OPTIONS FOR STUDENTS IN ANN ARBOR"

Author: Bruce R. McPherson, Seven Daniels, and William P. Stewart

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The development of alternative education in Ann Arbor is discussed by the authors. It details why the schools were developed and what steps the district took in setting up the alternatives.

9. "SOME INFORMATION ABOUT THE PORTLAND, OREGON DISTRICT'S INVOLVEMENT WITH EDUCATIONAL OPTIONS"

Author: Presented to the First Annual International Conference on Magnet Schools, March 9-12, 1977, Dallas, Texas.

Publisher: Public Information Department, Portland Public Schools, Portland, Oregon.

Summary: A brief description of educational options available in the Portland Public Schools was presented to the First Annual International Conference on Magnet Schools.

10. "THOREAU SCHOOL WANTS TO JOIN WALLKILL CENTRAL"

Author: Karl Rodman in a Letter to the Editor

Publisher: Integrated Education, Issue 90, Vol. 15, No. 7

Summary: This Letter to the Editor describes a unique one room private school in Wallkill, New York and its efforts to become a part of the local school district.

11. "MAGNET SCHOOLS COSTLY IN ST. LOUIS"

Author: William Trombley

Publisher: Integrated Education, Issue 90, Vol. 15, No. 7

Summary: This is an analysis of magnet schools in St. Louis. It discusses the problems facing the school district, and it compares the magnet school concept to school districts in other urban areas.

12. "MAGNET SCHOOLS"

Author: Marj Wightman

Publisher: Texas Outlook, February 1978.

Summary: Marj Wightman has looked into the magnet school program in Richardson, Dallas, Fort Worth, and Houston. The author found enthusiastic students, sincere community involvement, and magnet school graduates who had moved successfully into jobs or additional education. The article also looks at each districts' reasons for establishing magnet schools and the type they chose to establish.

SCHOOL DISTRICT PUBLICATIONS

13. MAGNET SCHOOL DISTRICT IX

Author: Boston Public Schools

Publisher: Boston Public Schools, 1977.

Summary: This lists the magnet school programs available in the Boston Public Schools.

14. THE DALLAS STORY

Author: From the Council of Great City Schools binder, Fall Conference, October 27-29, 1977.

Publisher: The Council of Great City Schools

Summary: The Dallas Story discusses the various methods used by the Dallas Independent School District in its efforts to provide quality education and comply with a court desegregation order. The book looks at media campaigns, public relations campaigns, and community involvement. It details what types of community involvement exists in Dallas and how it was brought about.

15. THE CHOICE THAT MAKES THE DIFFERENCE

Author: Dallas Independent School District

Publisher: Dallas Independent School District publication

Summary: This Dallas Independent School District publication discusses the magnet school program currently in operation in Dallas. It discusses the philosophy behind the schools and how they operate. It also looks briefly at the programs in the Dallas High School Magnets.

16. EDUCATION EXCHANGE

Author: Education Department, Dallas Chamber of Commerce

Publisher: Education Department, Dallas Chamber of Commerce, February and April of 1979.

Summary: Education Exchange looks at business involvement in the Dallas Public Schools and the effect that involvement is having in the schools.

17. FOCUS

Author: Education Department, Dallas Chamber of Commerce

Publisher: Education Department, Dallas Chamber of Commerce, October 1978.

Summary: This publication discusses activities of the members of the Dallas Chamber of Commerce in the public schools. It also lists several publications on community involvement in the Dallas schools.

18. MAGNET EDUCATION PROGRAMS IN MASSACHUSETTS

Author: Massachusetts Department of Education

Publisher: Massachusetts Department of Education, 1975.

Summary: The Massachusetts Department of Education report shows the types of magnet schools in operation in Massachusetts and their effectiveness. It includes discussions on program, staffing, budget allocations, and actual costs of magnet programs.

19. "EDUCATIONAL OPTIONS FOR HIGH SCHOOL STUDENTS"

Author: Seattle Schools Desegregation Office

Publisher: Seattle School District No. 1, January 13, 1977.

Summary: This publication describes the options available to high school students in Seattle.

20. "EDUCATIONAL OPTIONS FOR MIDDLE SCHOOL AND JUNIOR HIGH SCHOOL STUDENTS"

Author: Seattle Schools Desegregation Office, Instructional Services

Publisher: Seattle School District No. 1, January 13, 1977.

Summary: This publication describes the options available to junior high students in Seattle.

21. "EDUCATIONAL OPTIONS FOR ELEMENTARY STUDENTS"

Author: Seattle Schools Desegregation Office, Instructional Services

Publisher: Seattle School District No. 1, January 13, 1977.

Summary: This publication describes the options available to elementary students in Seattle.

22. ALTERNATIVE EDUCATION IN SEATTLE PUBLIC SCHOOLS

Author: Seattle Public Schools

Publisher: Seattle Public Schools, January 1976.

Summary: This publication describes the alternative programs available within the Seattle Public Schools.

II. ALTERNATIVE EDUCATION

BOOKS

1. ALTERNATIVE EDUCATION: A SOURCE BOOK FOR PARENTS, TEACHERS, STUDENTS, AND ADMINISTRATORS

Author: Mario D. Fantini

Publisher: Anchor Books, Sardin City, N.Y., 1976.

Summary: In this book, Mario D. Fantini, a leading spokesman for alternate education, has brought together a wealth of material on alternative schools.

2. ALTERNATIVE SCHOOLS: A REVIEW

Author: David Thornton Moore

Publisher: Institute for Urban and Minority Education, New York, New York, 1978.

Summary: David Thornton Moore discusses many aspects of alternative schools. It includes discussions of governance, curricular focus, testing measures, and the schools within a school concept.

3. ALTERNATIVE SCHOOLS IN ACTION

Author: Robert C. Riordan

Publisher: Phi Delta Kappa Educational Foundation, Bloomington, Indiana, 1972.

Summary: In his book, Robert Riordan takes an in-depth look at the Cambrdige Pilot School and Metro High School in Chicago. It discusses the programs, goals, and conflicts of these schools.

Alternative Schools In Action looks at the patterns that have begun to emerge in alternative schools. Problems such as teachers 'burning out" and the "school within a school" approach are discussed. It lists five major tasks that the alternative movement must deal with if it is to survive.

4. A CONSUMER'S GUIDE TO EDUCATIONAL INNOVATIONS

Author: Mortimer Smith, Richard Peck, and George Wesfer

Publisher: Council for Basic Education, Washington, 1972.

Summary: The authors give brief descriptions of a number of different educational tools. It includes topics such as alternative schools, encounter groups, micro teaching, and team teaching.

5. ALTERNATIVES IN EDUCATION - FREEDOM TO CHOOSE

Author: Vernon H. Smith, et al.

Publisher: Phi Delta Kappa, Bloomington, Indiana, 1976.

Summary: Vernon H. Smith discusses different kinds of alternative programs, characteristics of alternative public schools, and purposes of alternative public schools. It stresses placing emphasis on instruction, on curriculum, on resources and facilities.

6. OPTIONAL ALTERNATIVE PUBLIC SCHOOLS

Author: Vernon H. Smith, et al.

Publisher: The Phi Delta Kappa Educational Foundation, Bloomington, Indiana, 1974.

Summary: This book discusses types of alternative schools, their common characteristics, psychological considerations, sociological considerations, economic considerations, and potential impact.

PERIODICALS

7. "ALTERNATIVES AS EDUCATION"

Author: John Bremer

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: "Alternatives as Education" is a philosophical approach to the question of alternative education. Here we are told that the decision-making involved in alternative education is an education in itself.

8. "EDUCATIONAL ALTERNATIVES - WHY NOT? WHY NOT"

Author: Harry S. Broudy

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: Harry S. Broudy looks critically at the rationale for educational alternatives. He looks first at the claim that alternative schools promote freedom. The question here is whether this is freedom to do something or to escape something.

This article also discusses the questions of alternatives offering better choices, providing for differences, and promoting creativity.

9. "ARE THERE REALLY ANY ALTERNATIVES?"

Author: James Cass

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: "Are There Really Any Alternatives?" looks at the changes that have been made in education in the past. The author found that most changes were in name only rather than in substance. He also discusses the need to educate people in the manner to which they are best suited.

10. "A DECADE OF ALTERNATIVE SCHOOLS AND WHAT OF THE FUTURE"

Author: Curriculum Report

Publisher: Curriculum Report, October 8, 1978.

Summary: This article discusses alternate school options, misconceptions, legitimate concerns, and NCA Standards applying to alternative schools.

11. "LIONS IN THE PARK: AN ALTERNATIVE MEANING AND SETTING FOR LEARNING"

Author: Philip DeTurk and Robert Mackin

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The authors look at several alternative programs and their successes with students.

12. "ALTERNATIVE EDUCATIONAL PROGRAMS: PROMISE OR PROBLEMS?"

Author: Mario D. Fantini

Publisher: Educational Leadership 32(2), Association for Supervision Curriculum Development, 1974.

Summary: Mario D. Fantini deals with the promises made by the alternative movement. Fantini does not agree with the view held by many, that alternative schools will solve all our problems. He does look realistically at what "options" are, how they function, and what they and he expect to achieve.

13. "ALTERNATIVES IN THE PUBLIC SCHOOL"

Author: Mario D. Fantini

Publisher: Today's Education, September-October 1974.

Summary: The focus of this article is on allowing students, parents, and teachers a voice in course selection. The intent is to provide matching of compatible learning and teaching styles.

14. "ALTERNATIVES WITHIN PUBLIC SCHOOLS"

Author: Mario D. Fantini

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: "Alternatives Within Public Schools" examines alternative patterns that are forming, methods for legitimizing an alternative, and how alternatives are being used to reform the public education system in the country. The author lists five criteria that must be applied when developing alternative schools. He sees the development of legitimate alternatives as a feasible route to reforming the public schools.

15. "THE ALTERNATIVE TO SCHOOLING"

Author: Ivan Illich

Publisher: Saturday Review of Education, June 1971.

Summary: Ivan Illich, in his article "The Alternative to Schooling," looks into the "hidden" influences in our current educational system. He discusses the aspect of responsibility for learning and looks at the choices the educational community will have to confront.

16. "THE TRADITIONAL SCHOOL: KEEP IT AMONG THE ALTERNATIVES"

Author: Gene I. Macroff

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: New York's Bayside High is considered a "traditional school." It stresses structured settings and firm discipline. The article points to problems this school has had dealing with disadvantaged students.

17. "MANAGING CONTROVERSY ABOUT OPTIONAL AND ALTERNATIVE PROGRAMS"

Author: Dolores Paskal and William C. Miller

Publisher: Educational Leadership, October 1975.

Summary: There are twelve characteristics of effective optional programs listed in this article. These include local development, well-defined goals, representative enrollment, and personalized learning.

18. "ALTERNATIVE SCHOOLS: DO THEY PROMISE REFORM"

Author: Phi Delta Kappan

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: An editorial analysis of the trend towards alternative education is presented in this article. It discusses society's criticism of traditional schooling and the reasons behind alternative education. The article offers some criticism of alternative programs for failure to provide for effective learning.

19. "CBE VIEWS THE ALTERNATIVES"

Author: Mortimer Smith

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The author, Mortimer Smith, Executive Secretary of the Council for Basic Education, critiques the alternative school movement in view of the realistic reforms many people have been demanding from the public schools. He points out that often the alternative school movement offers changes which are nothing more than "slogans, ideological rhetoric and utopian sentimentality." He recognizes the need for change but fears that alternative schools are not meeting that need.

III. MAGNET SCHOOL

BOOKS

1. MAGNET SCHOOL PROJECT EVALUATION
FIRST ANNUAL REPORT, 1975-76

Author: Claude H. Cunningham, Frank P. Williams

Publisher: Houston Independent School District, Houston, Texas, 1976.

Summary: The Houston Magnet Schools and specialized alternative programs were developed in response to a court order in 1975. This report is an evaluation of the 34 programs in operation during the 1975-76 school year and the degree to which each program met its objectives and the objectives of integration. Four types of magnet programs were established: School Within a School, Add On Programs, Cluster Centers, and Separate and Unique Schools. In addition to the desegregation objectives, evaluated problems cited by the personnel involved included lack of support for curriculum development, transportation, recruitment, and acquisition of approved materials.

2. MAGNET SCHOOLS: WHAT ARE THEY? WHERE ARE THEY GOING?

Author: Gail Grafflin Fullington

Publisher: Oregon School Study Council, Eugene, Oregon, November 1977.

Summary: This book traces magnet school development from its formative years to the present. Included are case studies of students attending magnet schools in Dallas, Texas. Limitations of magnet schools are discussed both as to problem areas and to potential population. This report was the basis of a paper delivered at the First Annual Conference on Magnet Schools in Dallas, Texas during the spring of 1977.

3. THE MAKING OF A MAGNET SCHOOL: A PERSONAL ACCOUNT
OF THE JOURNEY FROM CHAOS TO QUALITY

Author: Kim Marshall

Publisher: Journal of Education, Vol. 160, No. 2, May 1978.

Summary: This description of the transformation of a neighborhood school in a changing Boston neighborhood into a middle school magnet - with little direction or theme. This resulted from a change in the population coupled with a court ordered policy for desegregation. Given no clear directives or objectives except that it was to become a "magnet school," the program evolved during the summer from work of teachers dedicated to making the curriculum attractive to a wide range of students in the Boston area. Problems and progress are discussed in a realistic, understandable manner.

4. THE MAGNET SCHOOL BOOM: IMPLICATIONS FOR DESEGREGATION

Author: Constancia Warren

Publisher: Institute for Urban and Minority Education, Columbia University, 1978.

Summary: Constancia Warren traces the emergence of magnet schools from the private institutions to the "free schools" of the 1960's. The author identifies three trends that have affected the boom of magnet schools in recent years and discusses the problems arising from each.

PERIODICALS

5. "VOLUNTARY RACIAL INTEGRATION IN A MAGNET SCHOOL"

Author: James E. Rosenbaum and Stefan Presser

Publisher: School Review, Vol. 86, No. 2, February 1978

Summary: This article discusses magnet school concepts, distinctive features, and problem areas.

IV. TEACHER PREPARATION

BOOKS

1. THE TEACHER'S GUIDE TO OPEN EDUCATION

Author: Lillian S. Stephens

Publisher: Holt, Rinehart, and Winston, Inc., New York, 1974.

Summary: Here is a step-by-step guide for a teacher who wants to initiate an open classroom setting. The book offers options at each step to allow the teacher to select the method that best suits her/his students.

PERIODICALS

2. "SIMULTANEOUS ALTERNATIVE TEACHER PREPARATION PROGRAMS"

Author: Richard Clark and Donald J. Kingsbury

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The authors deal with the teacher education at the University of Massachusetts. The article describes several areas of alternative education in which the University of Massachusetts is preparing teachers.

3. "MEDIATION IN AN ALTERNATIVE TEACHER TRAINING PROGRAM"

Author: John L. Parker and Richard J. Withycombe

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: The Urban Teacher Education Project based in Portland, Oregon is described in this article. The project emphasizes the training of teachers for alternative programs and for work with inner city youth.

4. "ALTERNATIVE PUBLISHING AND EDUCATION"

Author: Jack Perron

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: In this article Jack Perron who has held many different positions in the field of publishing and education, discusses the existence of an underground in educational publishing and how it affects the alternative school movement.

5. "THE DISCIPLINES, CURRENT MOVEMENTS, AND INSTRUCTIONAL METHODOLOGY"

Author: Louis Rubin

Publisher: Curriculum Handbook, Allyn and Bacon, Inc., 1973.

Summary: This handbook discusses the characteristics of alternate schools. It discusses teaching difficulties, operational concepts, and implications of alternative school curriculum.

V. BASIC GENERAL REFERENCES

BOOKS

1. SISYHHUS, OR THE LIMITS OF EDUCATION

Author: Siegfried Bernfeld

Publisher: University of California Press, California, 1973. (Ougal Suhrkank Verlage, Frankfurt am Main, 1967.)

Summary: Siegfried Bernfeld, an outstanding student of Sigmund Freud, looks briefly at the formal education of the 1920's and the educators who advanced theories without looking realistically at the potential results.

2. NEW STRATEGIES FOR EDUCATIONAL DEVELOPMENT

Author: Cole S. Brembeck and Timothy J. Thompson

Publisher: Lexington Books, Lexington, Massachusetts, 1973.

Summary: New Strategies for Educational Development contains a group of essays by noted authors discussing the character and purpose of formal and non-formal education.

3. IMPLEMENTATION: ESSENTIALS FOR SUCCESS

Author: Leonard B. Finkelstein

Publisher: NASSP Bulletin, September 1973.

Summary: Leonard Finkelstein offers sound advice about starting an alternative program. He discusses key questions that need to be asked by anyone considering an alternative program. His responses come from intensive involvement with a variety of programs.

4. FREEDOM AND BEYOND

Author: John Holt

Publisher: E. P. Dutton & Co., Inc., 1972.

Summary: In this book Holt describes a society where everyone would have the choice to learn whatever is of interest whether in a formal setting or an alternate setting. The book looks at the use of freedom and authority in education.

5. INSTEAD OF EDUCATION, WAYS TO HELP PEOPLE DO THINGS BETTER

Author: John Holt

Publisher: E. P. Dutton & Co., Inc., New York, 1976.

Summary: This book focuses on the idea of learning by doing. Holt has strong criticism for the current idea held by many educators that you must learn something before you begin to do it. Holt discusses creative use of educational facilities and resources. He also advocates a process of using skilled individuals to teach in a "learning exchange" arrangement.

6. FREE SCHOOLS

Author: Jonathan Kozol

Publisher: Houghton Mifflin Company, Boston, 1972.

Summary: Free Schools gives the reader information needed to start a "free school." It explains the problems likely to be encountered and offers possible solutions. Jonathan Kozol has first hand experience in organizing free schools."

7. THE LIMITS OF SCHOOLING

Author: Peter Marin, Vincent Stanley, and Kathryn Marin

Publisher: Prentice-Hall, Inc., Englewood Cliffs, N. J., 1975.

Summary: The Limits of Schooling is a collection of essays on varying aspects of change within our public schools. The first section looks at the beginning of the "free school" movement and at some of the philosophy that is the basis for the movement. The second section looks at methods of education other than formal schooling. Part three deals with public school reform and the last section deals with classroom operation. Contributors to the book included such authors as Jonathan Koyol, John Holt, and Paul Goodman.

8. EDUCATION IN ACTION - 50 IDEAS THAT WORK

Author: Jeanne S. Park Editor

Publisher: U.S. Government Printing Office, U.S. Department of Health, Education and Welfare, Office of Education, Washington, D.C.

Summary: Brief summaries describing educational programs compiled from the schools throughout the U.S. funded by the Office of Education are contained in this report.

9. THE REFORM OF SECONDARY EDUCATION

Author: The National Commission on the Reform of Secondary Education

Publisher: The National Commission on the Reform of Secondary Education, New York, 1973.

Summary: The Reform of Secondary Education gives recommendations for alternative programs. It looks at the advantages and disadvantages of alternatives, recent developments, recommendations to authorities and individualized instruction.

10. TO SAVE A CITY

Author: Henry S. Reuss

Publisher: U.S. Government Printing Office, Committee on Banking, Finance, and Urban Affairs, September, 1977.

Summary: This publication discusses the importance of the city, the role of urban planning, and the impact of urban flight.

11. THE FREE SCHOOL

Author: W. Kenneth Richmond

Publisher: Methuen & Co., Ltd., London, England, 1973.

Summary: The Free School summarizes the history of educational philosophies. The author expresses concern about modern educational philosophy and gives examples of how the rest of the world is trying to solve these problems. Richmond believes that the "free schools" are the way to correct the wrongs in modern schools.

12. NO MORE SCHOOL

Author: Howard S. Rowland

Publisher: E. P. Dutton & Co., Inc., New York, 1975.

Summary: No More School describes Howard S. Rowland's decision to teach his children himself during a year long sabbatical. This book is about the family's successes and failures.

13. THE CRISIS IN EDUCATION IS OUTSIDE THE CLASSROOM

Author: James J. Shields, Jr.

Publisher: Phi Delta Kappa Educational Foundation, Bloomington, Indiana, 1973.

Summary: This book looks at the factors in society that affect our educational system. Contemporary educational reformers, such as A. S. Neill, Carl Rogers, and George Leonard, are discussed.

The author looks at the idea of more freedom for students in the classroom. He found that students had difficulty making the transition from the traditional authoritarian classroom to one in which the student was required to make decisions. The last chapter of The Crisis in Education is Outside the Classroom discusses the new role for teachers in public education.

PERIODICALS

14. "WHATEVER HAPPENED TO THE FREE SCHOOL MOVEMENT"

Author: Robert D. Barr

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: Robert D. Barr compares the current movement towards alternative education to the "free schools" movement of the sixties. He finds few similarities between the narrowly defined "free schools" and the movement day which promises diversity in education.

15. "THE FREE SCHOOL MOVEMENT - A PERSPECTIVE"

Author: Lawrence A. Cremin

Publisher: Paper presented at the Institute of Philosophy and Politics of Education at Teachers College, Columbia University.

Summary: This article takes a look at the historical aspects of the "free school" movement from its beginning as a protest against formal schooling to its current status of a reform movement within our formal educational structure.

16. "THE INDEPENDENT PUBLIC SCHOOLS"

Author: Susas S. Egan

Publisher: Current History, Current History, Inc., August 1972.

Summary: A discussion of the development of alternatives within the public schools is contained in this article. The reader is provided with some historical background on the reasons for these changes.

17. "FAMILY-DESIGNED LEARNING: ACCOUNTABILITY AS CUSTOMER SATISFACTION"

Author: Thornwald Esbensen

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973

Summary: Thornwald Esbensen describes in detail the program of the West End Parochial School in Duluth, Minnesota. This school offers a program allowing parents and students a complete responsibility in the selection of course work. The selection is made on the basis of a catalog of objectives and then contracts are entered into with the students for completion of the objectives.

18. "MATCHING TEACHER-LEARNING STYLES"

Author: Mario D. Fantini

Publisher: Public Schools of Choice, Simon & Schuster, 1974.

Summary: Mario D. Fantini discusses briefly the need for alternative programs within comprehensive schools. He looks closely at the programming offered in Quincy II High School in Quincy, Illinois.

19. "SCHOOLS WITHIN SCHOOLS: SOLVING THE PROBLEM OF DIFFERENT NEEDS"

Author: Mario D. Fantini

Publisher: The New York Times, The New York Times Company, 1975.

Summary: Mario D. Fantini discusses briefly the need for alternative programs within comprehensive schools. He looks closely at the programming offered in Quincy II High School in Quincy, Illinois.

20. "THE FREE SCHOOL MOVEMENT"

Author: Allen Graubard

Publisher: Harvard Educational Review 42, August 1972, President and Fellows of Harvard College.

Summary: This essay presents data on the "free school" movement and some discussion on the concepts of educational and social changes that underlie such movements.

21. "A SCHOOL VOUCHER EXPERIMENT RATES AN 'A' IN COAST DISTRICT"

Author: Even Jenkins

Publisher: The New York Times, May 29, 1973, The New York Times Company, 1973.

Summary: Even Jenkins discusses the first year of an experiment with educational vouchers in Alum Rock, one of the poorest districts in California.

22. "THE SOCIAL AND INSTRUCTIONAL SETTING FOR METROPOLITAN INTEGRATION"

Author: Daniel V. Levine and Rayne F. Levine

Publisher: School Desegregation in Metropolitan Areas: Choices and Prospects, The National Institute of Education, Washington, D.C.

Summary: Here is a broad view of the problems of metropolitan area schools and society with an emphasis on problems associated with the growth of racial and socioeconomic segregation in parts of the metropolitan area.

23. "INCREASING THE OPTIONS IN SOCIAL STUDIES"

Author: Gerlad W. Marker

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: Gerald Marker uses this article to describe four alternative programs being offered in social studies education at Indiana University. These programs are an attempt to combat the growing concern that our education programs are failing to produce qualified teachers.

24. "THE SHANTI EVALUATION: EVEN WILBUR AND ORVILLE COULDN'T MAKE IT FLY"

Author: Gene Mulcahy

Publisher: Changing Schools, 4:2, No. 14, School of Education, Indiana University, 1975.

Summary: Gene Mulcahy looks at the necessity for thorough and systematic evaluation of alternative programs. He views most current evaluation systems as useless for alternative programs.

25. "BIG CITY SCHOOLS, CAN THEY BE SAVED?"

Author: Newsweek

Publisher: Newsweek, September 12, 1977.

Summary: A number of big city school districts including Atlanta, Dallas, Boston, and New York are viewed in this article. It centers around the total callapse of big city districts. The author relates the method used with special emphasis on the commitment role in the schools.

26. "OPTIONS IN PUBLIC EDUCATION: THE QUIET REVOLUTION"

Author: Vernon H. Smith

Publisher: Phi Delta Kappan, Vol. LIV, No. 7, March 1973.

Summary: Vernon Smith begins his article with concise descriptions of the various types of alternative schools. He then lists five characteristics which he finds are common to all types of alternative education. He defines and discusses the activities of the National Consortium for Options in Public Education.

DOCUMENTS

27. ANNUAL INTERNATIONAL MAGNET SCHOOL CONFERENCE

Author: Donald R. Waldrip & Associates

Publisher: Conference Summary Report, 1978

Summary: The report of the Second Annual International Conference on Magnet Schools held in New Orleans, Louisiana, January 1978, discusses the conference's main focus and lists the conference speakers and participants. It also gives some participant feedback and suggestions.

29. ANNUAL INTERNATIONAL CONFERENCE ON MAGNET SCHOOLS

Author:

Publisher: Conference Summary Report, 1979

Summary: The Third Annual International Conference on Magnet Schools was held in San Diego, California, in January 1979. This report lists the main participants and speakers at the conference. A brief synopsis of each of the main speakers is included in this report. The report also includes some feedback and suggestions from those attending the conference.

30. THE COUNCIL OF GREAT CITY SCHOOLS

Author:

Publisher: Fall Conference, October 27-29, 1977, Dallas, Texas

Summary: This conference packet includes the agenda for the Council of Great City Schools Conference held in Dallas, Texas in 1977. It gives the history and purpose of the Council of Great City Schools and discusses the speakers and their credentials.